

JUNE • 1959

Metal Products Manufacturing

119

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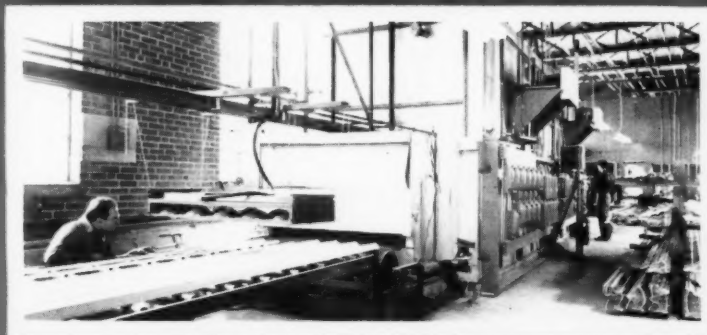
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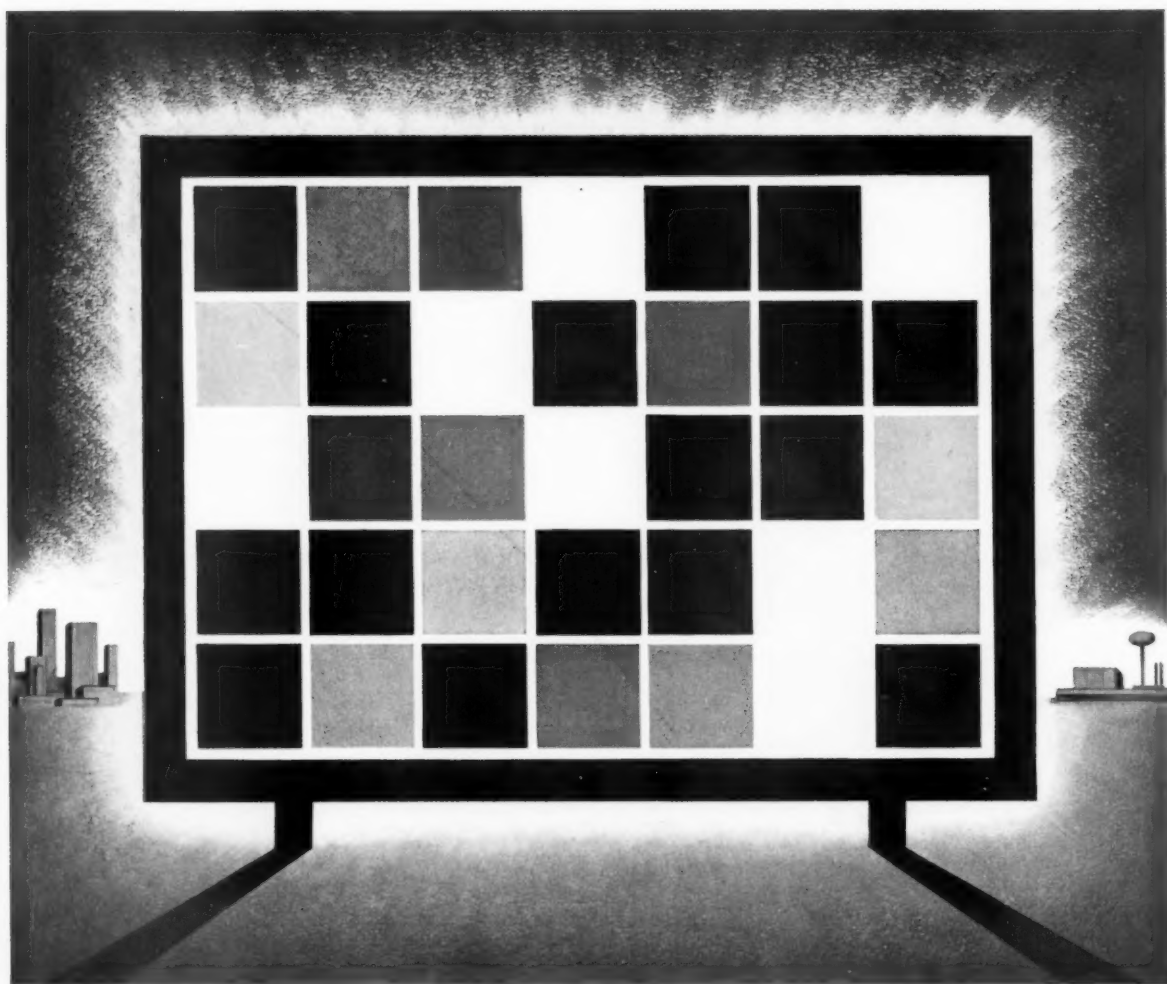
*Serving the
Appliance and
Fabricated Metal Products
Industry*



AMI President Earl E. Manning, Director James — Page 36



New Plant Design for Porcelain Enamel on Aluminum — Page 44



How Shell Chemical serves the surface coating industry

Shell Chemical has maintained for many years an active program of practical and theoretical research in oxygenated solvents and Epon® resins for surface coatings.

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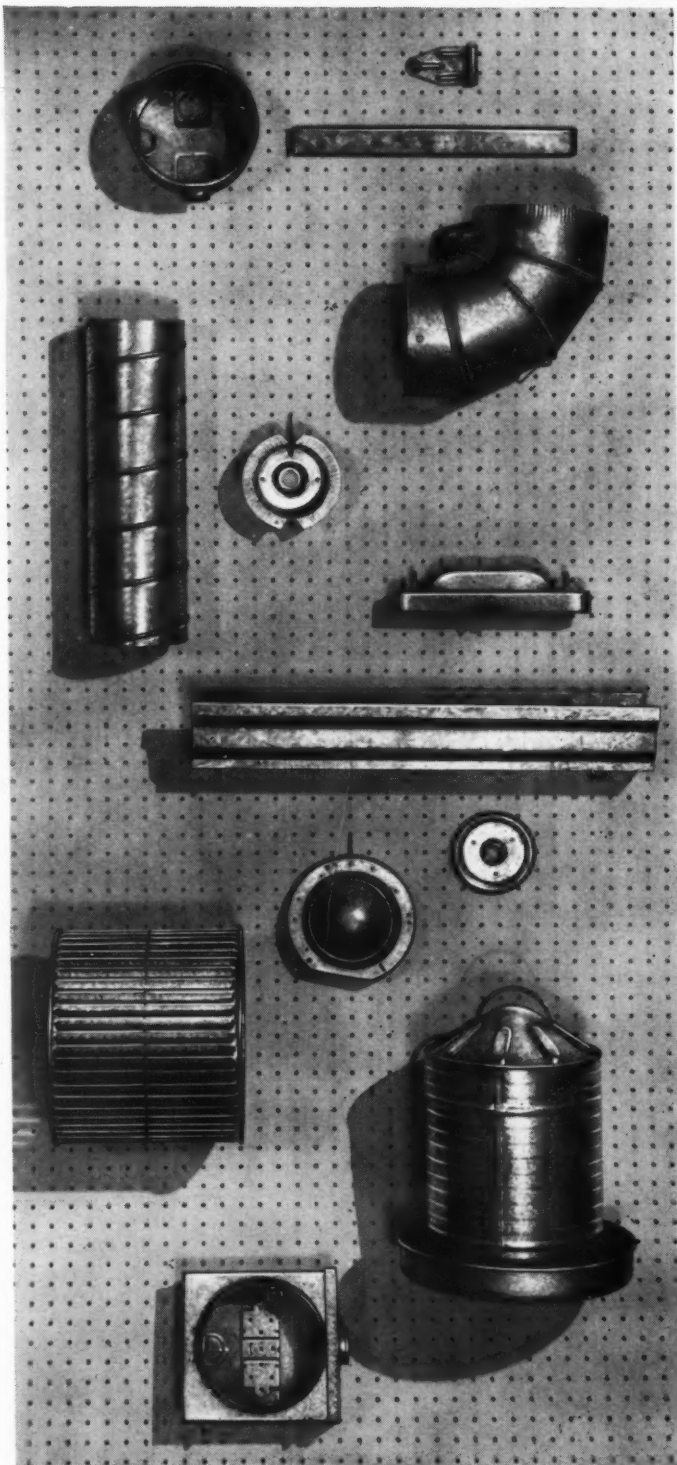
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ARMCO STEEL



Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

coming in November...BIG NEWS!

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MPM

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DANA CHASE PUBLICATIONS

York Street at Park Avenue, Elmhurst, Illinois
Telephones • TERRACE 4-5280 • TERRACE 4-5281



JUNE • 1959

VOL. 16 • NO. 6

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METAL PRODUCTS MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. The editorial scope covers design, engineering, market and statistical information and technical and practical information on plant facilities and all phases of manufacturing "from raw metal to finished product." Free controlled circulation to top management, purchasing, engineering and key plant management and supervision in metal product manufacturing plants. To others, subscription price is \$8.00 per year, domestic. To all other countries \$10.00 per year (U.S. funds). Single copies, \$1.00.

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DANA CHASE PUBLICATIONS
PRINTED IN U.S.A.
Accepted under the act of June 5, 1934
at Aurora, Illinois
authorized January 7, 1948.

Editor and Publisher • DANA CHASE
Associate Editor • WM. N. LARSEN
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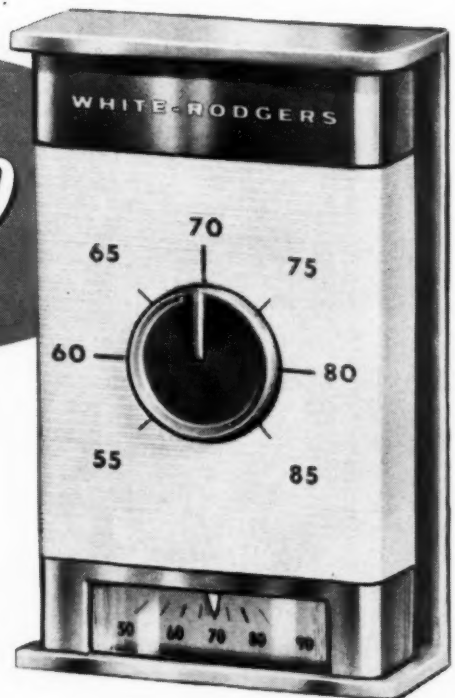
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PROVED OPERATING MECHANISM . . .
AT A LOW, LOW PRICE**

NEW
CUSTOMline 130
THERMOSTAT

by WHITE-RODGERS

Here's an entirely new approach to thermostat design and marketing. CUSTOMline 130 offers many features of high-priced 'stats, plus clean dynamic styling and White-Rodgers famed standards of quality . . . yet, is priced at rock bottom.

Best of all, it's *available immediately* . . . through manufacturers and wholesalers. Ask your supplier about this new and exciting CUSTOMline thermostat, or write direct today for complete details.



Inside view, showing the well-known White-Rodgers operating mechanism.

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- ☐ Heat-anticipated to match primary controls
- ☐ Superb styling by designer Earl Claus
- ☐ Snap-on cover design
- ☐ New thermometer, smarter looking, easier reading

- ☐ Quick, easy mounting to wall or outlet box
- ☐ Simplified wiring—convenient terminals

Standard types available now. Customized covers with your brand name available on special order, in manufacturing quantities.

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Automatic Controls for Heating, Air Conditioning and Refrigeration



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Superior STAINLESS STRIP STEEL



on the *high-style* model of

GM's no. 1 car—the beautiful Chevrolet Impala

Yes, every one of these 48 precisely-contoured *stainless steel* parts is used on the exterior body trim of the 1959 Chevrolet *Impala*. Here you see beauty, brilliance and strength that resist weather and wear without care for the life of the car—selling and re-selling at every turn. ● We are proud of Superior Stainless Strip Steel's applications in the fine automobiles of General Motors. Can we serve *your* stainless strip needs?

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is busily engaged in developing, improving and producing precision controls to better serve you — our customer.

Our wealth of design and engineering "know-how" is readily available to you. Write or call today. **Indiana Division, Robertshaw-Fulton Controls Company, Indiana, Pennsylvania.**

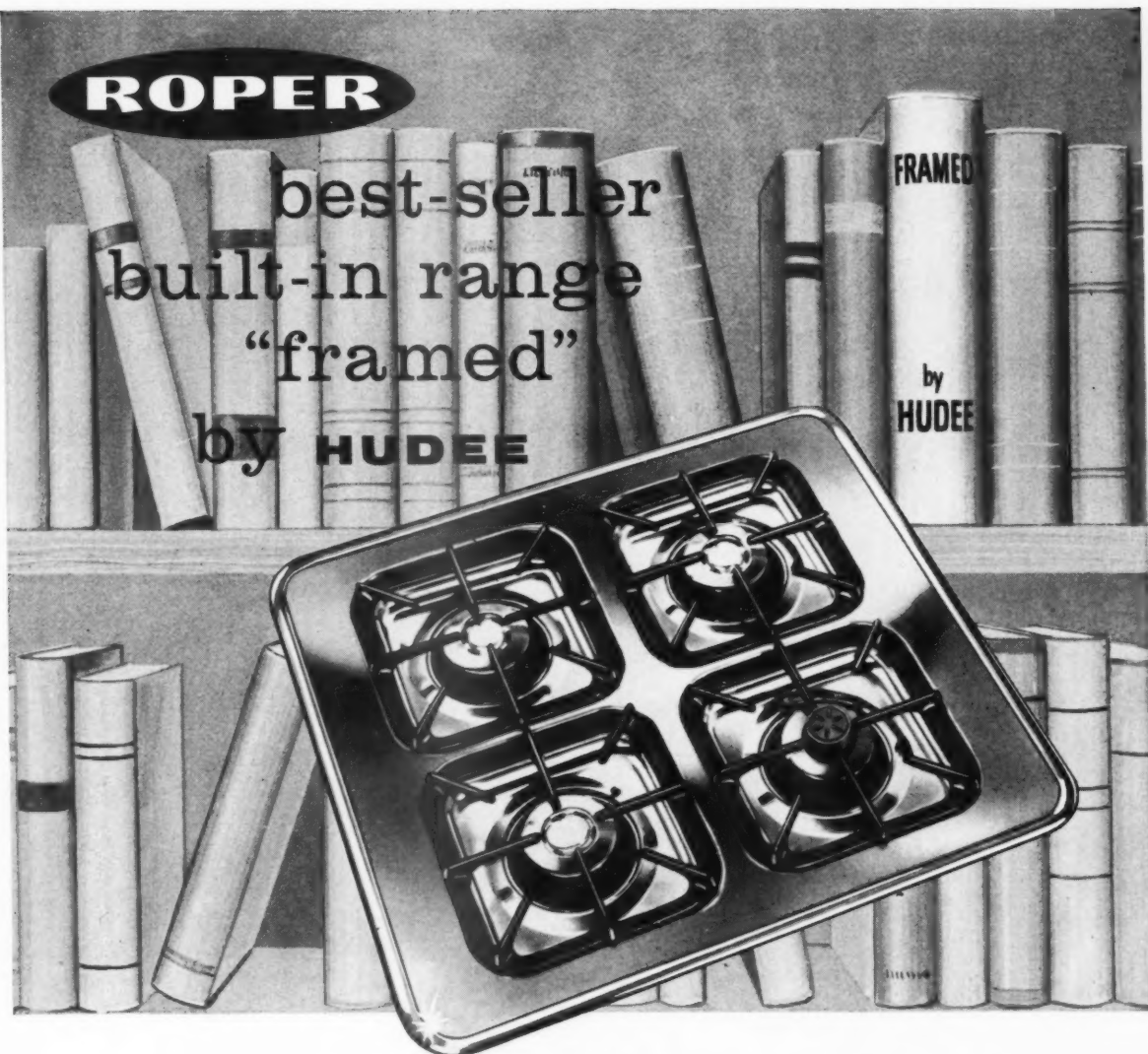
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best-seller
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Hudee Frames are covered by patents 2,440,741 and 2,704,370.

FRIDAY

23

JAN. 1959

JANUARY						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

12:00 lunch with Jack

Bring up at Monday meeting -
Inland steel co. now furnishes
enameling iron in coils -
should mean -

- ① Inventory Consolidation
 - ② lower labor costs
 - ③ continuous operations
- increased production

Comes in widths up to 60"
16 to 24 gage inclusive - coils inside
diam 24" - max outside diam 72"
Coil weights up to 47000 lb.

23 -

FRI., JAN. 23, 1959

- 342

look ahead with **LEAD**



14,000 Aluminum Extrusions are lead porcelain enameled to keep ceiling maintenance costs down in this famous new Virginia tunnel.

Leaded Porcelain Enamel Saves on Tunnel Overhead!

New Application: The new Hampton Roads Tunnel, world's longest trench-type tunnel, features a ceiling of extruded aluminum panels. All 14,000 of them are lead porcelain enameled to (quoting from the dedication program) . . . "assure low, long-term maintenance costs."

Lead compounds are used on the wall tiles, too—to increase brilliance, luster and smoothness of the glaze. And make it long-lasting!

Lead offers many advantages in porcelain enamels. It

reduces the firing temperature at which the enamel can be applied to the base metal. Particularly important for metals with a low melting point like aluminum.

And lead increases the "chip-resistance" of enamels. Lets you *punch, drill, shear or saw* them with little or no fragmentation.

Find out how lead can help you. Write for 44 page illustrated booklet "Lead in the Ceramic Industries" today. You'll find it full of new ideas.

4747



Lead Industries Association

60 East 42nd Street

New York 17, N. Y.

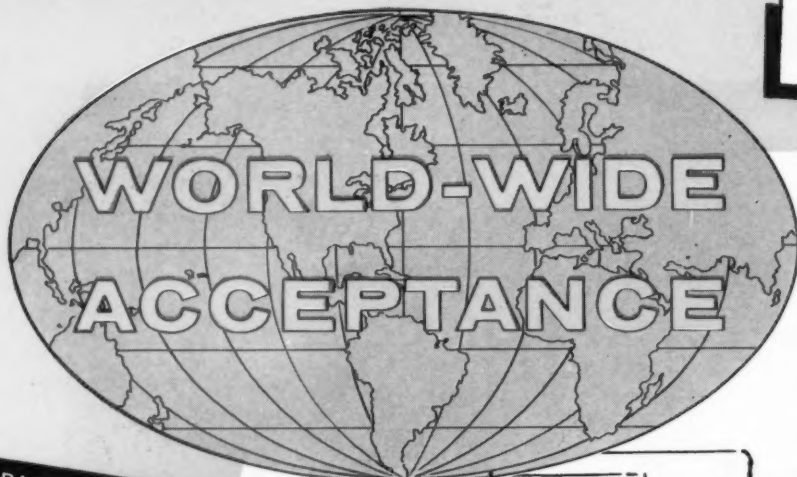
Rely on **LEAD COMPOUNDS** — key to better ceramics

E N A M E L S • G L A S S • G L A Z E S • C O L O R S • B O D I E S

Low melting range
Wide softening range
Low surface tension

Resistance to devitrification
Adaptable coefficient of expansion
Freedom from color
High opacity to radioactive energy

Good electrical properties
High index of refraction
Maximum workability

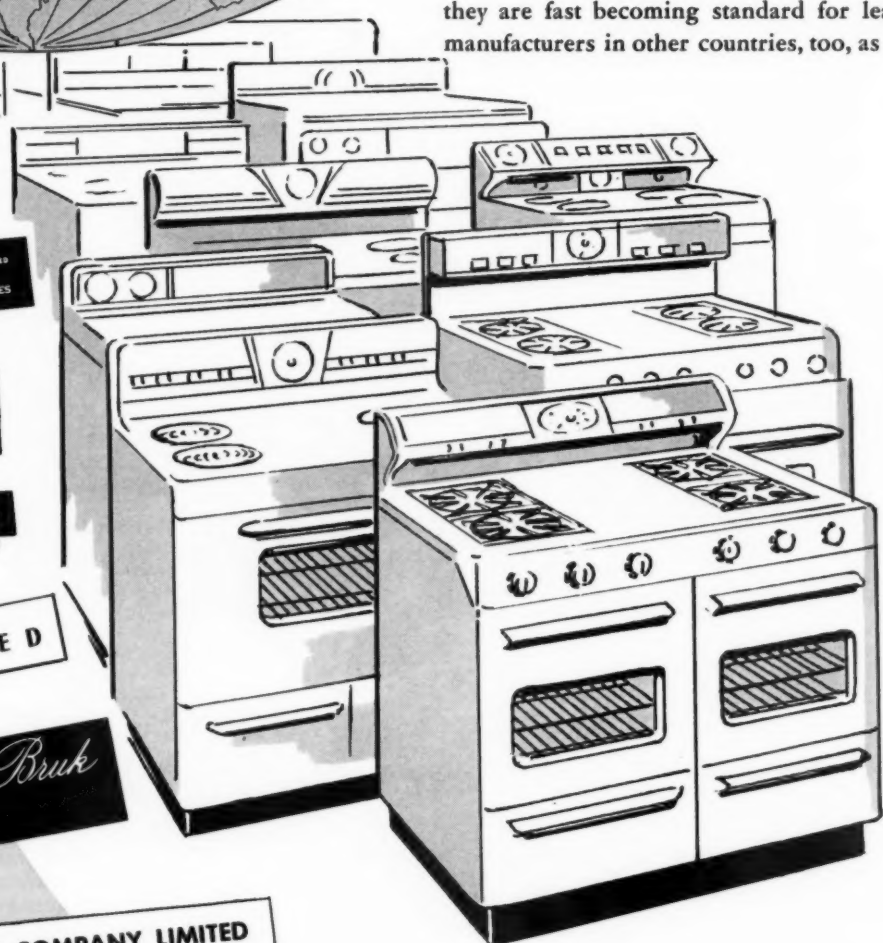


kelvinator

STA. CLARA EDO. DE MEX.

FOR PERMA

PERMA-VIEW oven door windows are the standard with leading range manufacturers in the United States, from Coast to Coast. Now they are fast becoming standard for leading manufacturers in other countries, too, as these




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THE Enterprise FOUNDRY COMPANY LIMITED

THE GUELPH STOVE CO. LIMITED
MANUFACTURERS OF
STOVES, RANGES AND FURNACES

Glasindustrie
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E. ROY INDUSTRIES LTD.


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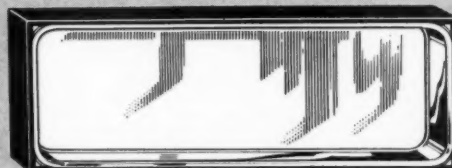
CANADIAN GENERAL ELECTRIC COMPANY LIMITED



ROUND



SQUARE



RECTANGULAR



TRAPEZOID

We can manufacture any shape, and size, and thickness to meet your engineering requirements.

DE ETNA
BRED A, NETHERLANDS

**GENERAL
STEEL WARES**
LIMITED

**BRANTFORD
WASHING MACHINES
LIMITED**

Gurney
PRODUCTS LIMITED

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LA FONDERIE DE L'ISLET
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**THERMAX
LIMITED**

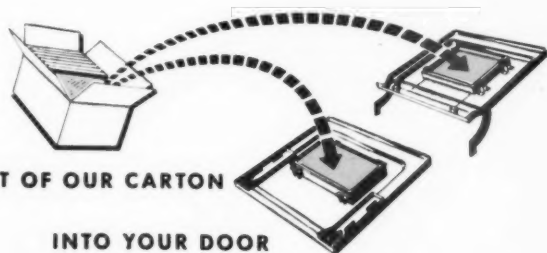
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LIMITED

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(HAATSCHAPPIJ TER Vervaardiging van GASMETERS, ENZ.)

Husqvarna Vapenfabriks Aktiebolag
Husqvarna - Sweden

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WESTINGHOUSE
COMPANY • LIMITED**

Alternate methods of attachment may be used.



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INCORPORATED**

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PERMA-VIEW

manufacturers learn of the sales advantages of the PERMA-VIEW "No-Fog" window. From Canada to Europe—to Australia or South Africa—PERMA-VIEW is recognized as the finest and most economical oven door window.

(The accompanying names and trademarks represent some of the present users outside the United States.)

The strong steel encased, double pane PERMA-VIEW window incorporates the finest quality heat resisting glass. It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." For the homemaker it presents an "invitation to buy."

The PERMA-VIEW window is pre-engineered, and comes to you ready for immediate installation in your range. "Out of our carton into your door." Let our specialized production lines serve as a part of your sub-assembly facilities. If you do not use a window, if you make your own window, or if you buy your window from another source, we suggest you phone or write us for complete details on the ease and economy of adding this sales feature to your new ranges.



MPM
PHOTOGRAPH BY JOS. R. CAVALLO

KAY THOMAS • MRS. HOME LAUNDRY QUEEN • 1959

Announces Mrs. Home Laundry Queen for 1959

FOR THE THIRD CONSECUTIVE YEAR, MPM has conducted a photo contest for the selection of Mrs. Home Laundry Queen. Photographs for the current contest were submitted by the manufacturers of home laundry equipment for publication in the special Home Laundry Section of the September 1958 issue. Selection of the winner was made to key the announcement in this issue of the publication which immediately precedes the AHLMA national meeting scheduled for the Edgewater Beach Hotel in Chicago, June 18-19.

Increasing interest among the manufacturers in this third annual contest made the final selection difficult, but we believe MPM readers will agree with our judges that the beauty and background of the 1959 Queen combine to make her an ideal representative for the home laundry manufacturing industry. Representatives to the AHLMA meeting in Chicago will be pleased to know that they will have an opportunity to meet the new Queen at the time of the convention.

THE QUEEN

Kay Thomas (blue eyes, auburn hair) is of German extraction and has lived in Milwaukee most of her twenty-six years. She attended St. John's Cathedral High School and Marquette University. Kay is married to Mr. James Charles Thomas, age twenty-nine, who also attended Marquette University, and works for the Travelers Insurance Co. as a field supervisor.

The new Queen started modeling at the age of sixteen and graduated from Patricia Stevens modeling school; she has been modeling professionally for the past six years. Currently she does free-lance work and is also permanently employed at the Boston Store as a model. Kay is vice president of the Milwaukee Society of Models, co-chairman of the Fashion Committee for the Annual Charity Show for mentally retarded children. She is an accomplished seamstress, making most of her own and her children's clothes.

While her husband was stationed at El Paso Kay appeared weekly on a Texas TV show modeling clothes.

Kay at one time was an aspiring concert pianist, but being a mother, a homemaker, and model took precedence.



ABOVE: The photograph which won the 1959 contest award title for the Speed Queen entry. Shown with Kay Thomas is the Model A25-F Speed Queen automatic washer and companion dryer.

PHOTOS ON THIS PAGE BY POHLMAN STUDIOS, INC.

BELOW: This current photograph shows the Thomas family at their home in Milwaukee. Kay (Mrs. Home Laundry Queen) is entertained by daughter Mary Kay, age two. In the background, James Charles Thomas is "studying" with three and one-half year old Jeffery.



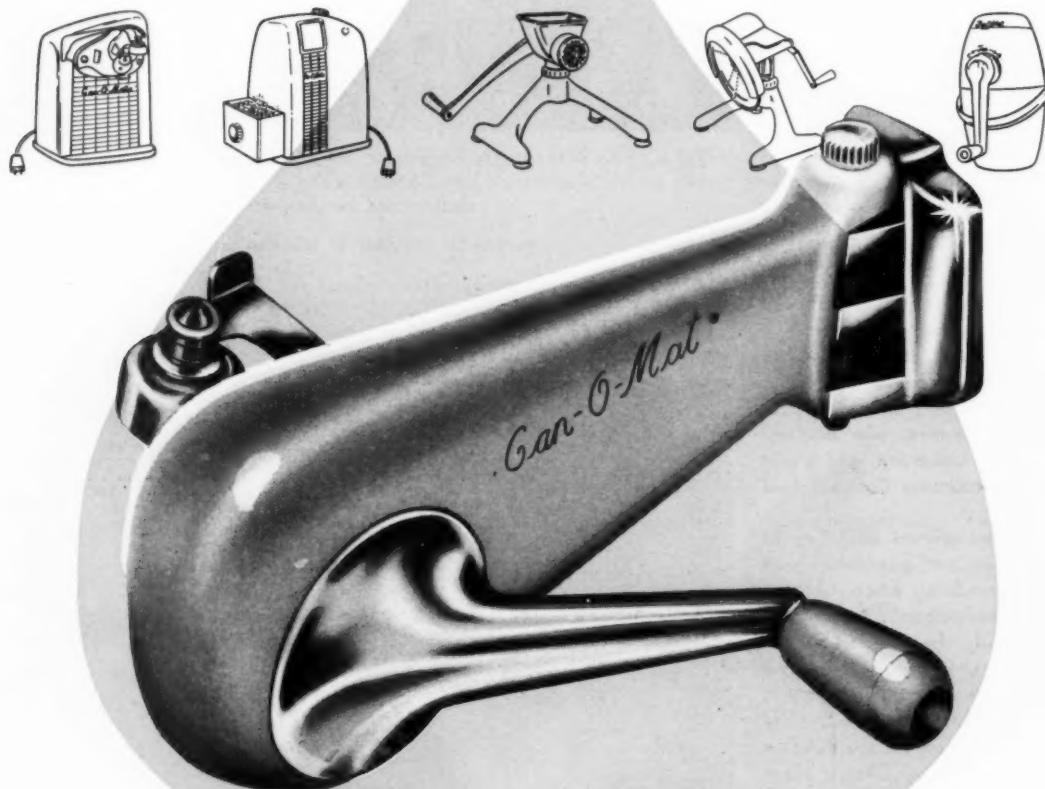
Cook's puts the crowning touch on *Can-O-Mat* beauty

Can-O-Mat is the "opening word" in millions of kitchens. *Can-O-Mat* opens any can in two seconds flat. Adds a highlight of elegance to any decor. And makes a treasured gift.

Rival Manufacturing Company, Kansas City and Montreal, makes world-famous *Can-O-Mat* and a distinguished line of other small appliances. Rival uses Cook's finishes in a wide range of colors to give many of these fine products the final touch of beauty and durability.

So do hundreds of other manufacturers—of thousands of products ranging from automobiles to zippers. For Cook's industrial finishes meet the requirements of engineers just as beautifully as they fall in with the flair of designers.

How about your own product? Find out how Cook's industrial finishes may help step up your sales—and return you important production savings as well.



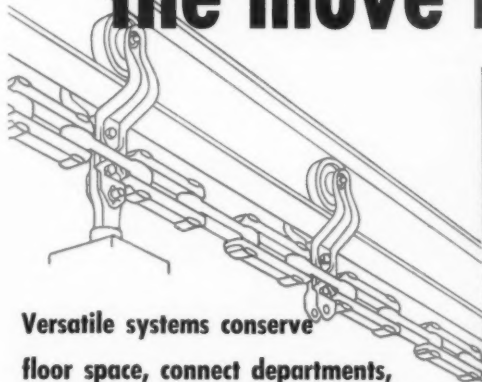
**COOK'S
PAINTS**

Cook Paint & Varnish Company
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Factories: Kansas City • Detroit • Houston

Short route or long, LINK-BELT trolley conveyors trim costs in

the move to modernization

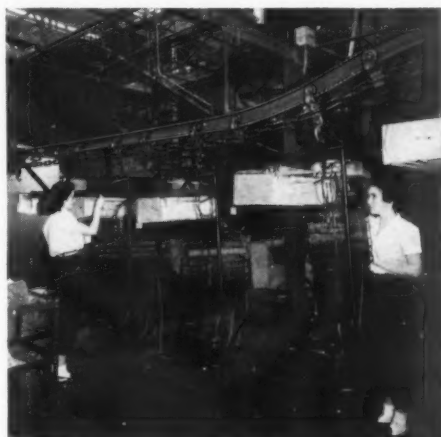


Versatile systems conserve floor space, connect departments, coordinate processing

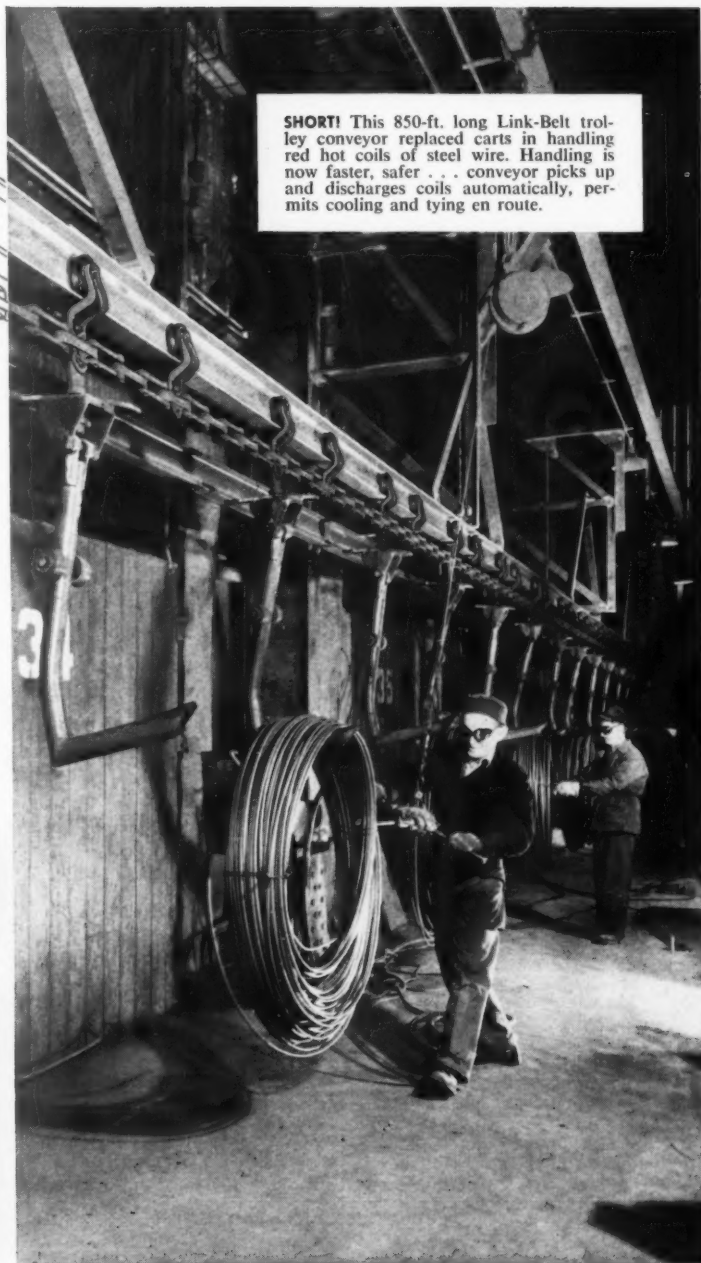
IN industry's move to modernization, Link-Belt trolley conveyors fulfill many basic objectives. In fact, few conveying methods affect production economics in so many ways, or so significantly.

They exploit otherwise unusable space, converting it to storage and traffic uses. They minimize manual work, prevent damage to the product. Resulting cost savings and production increases are seldom less than spectacular.

You can learn more about the versatility of Link-Belt trolley conveyors by contacting your nearest Link-Belt office. The experience gained from hundreds of installations will provide quick answers to any problems you have. Ask, too, for Book 2330 . . . containing trolley conveyor application and feature data.



LONG! Twenty-one miles of Link-Belt trolley conveyors coordinate complex assembly operations at this appliance manufacturing plant. The integrated system prevents damage from excessive handling, conserves manpower for more productive work.



SHORT! This 850-ft. long Link-Belt trolley conveyor replaced carts in handling red hot coils of steel wire. Handling is now faster, safer . . . conveyor picks up and discharges coils automatically, permits cooling and tying en route.

LINK-BELT

TROLLEY CONVEYORS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.

15,128

Here's an aluminum
...reduces maintenance costs...

...MIL-



Ordinary caustic solution causes build-up of scale on tank interior. Scale must be chipped off frequently.



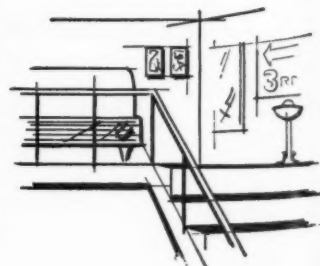
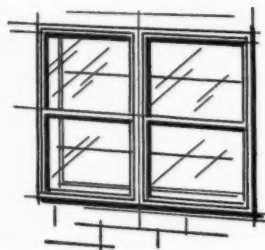
New Wyandotte Mil-Etch suspends dissolved aluminum in solution. No scale develops throughout entire life cycle.

Here's a brand-new caustic-type aluminum etchant that eliminates expensive shutdowns, needless maintenance and labor costs. Mil-Etch keeps dissolved aluminum in solution—prevents it from forming a hard scale that must be chipped from tank walls.

Etches rapidly and uniformly. Economically concentrated, Wyandotte Mil-Etch produces an attractive, uniform, high-quality etch in only a few minutes on aluminum extrusions, wrought sheets and bar stock. You can also use Mil-Etch for deep etching or chemical milling of aluminum alloys.

Easy to use. Mil-Etch is nondusty, will not cake

Use Mil-Etch for

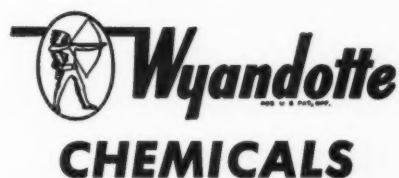


etchant that eliminates scale produces a bright matte surface **ETCH!**

in drums; also, no excessive foam or fumes. You can use a tank of Mil-Etch until it becomes "loaded" with dissolved aluminum. Tank dumping is simple — just pull the plug!

*Wyandotte Chemicals Corporation, Wyandotte, Mich.
Also Los Nietos, Calif. Offices in principal cities.*

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FOR METAL FINISHING**

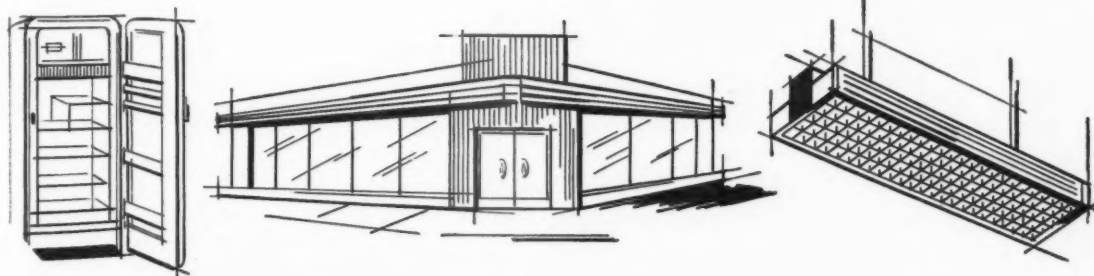


J. B. FORD DIVISION

Desmutting. For brightening aluminum alloys that turn dark in alkaline etching processes, try Wyandotte 2487. It is safer than ordinary acid solutions, and permits a closer control of the desmutting bath. Being in easy-to-handle granular form, solution make-up and additions are simple.

For full information on how new Mil-Etch and Wyandotte 2487 will solve your aluminum-etching problems, call your Wyandotte representative.

etching all aluminum surfaces



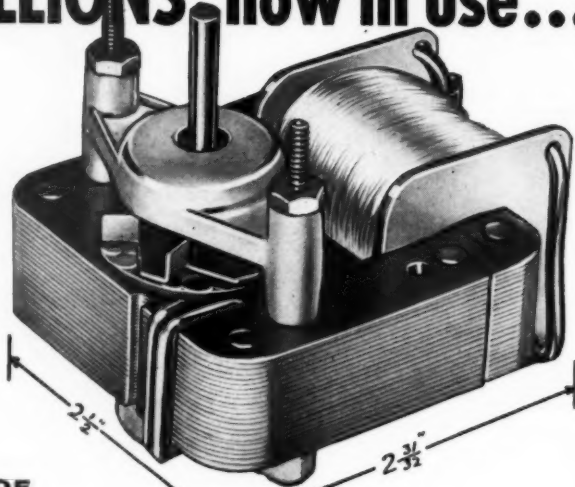
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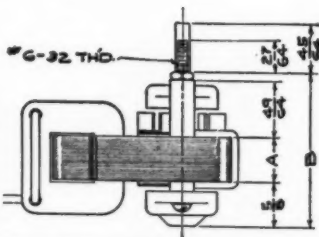


PROOF

that you can

RELY on GI

MODEL A Two-pole, shaded-pole motor available in various lamination thicknesses. Proved dependable millions of times over, it's the power choice of the nation's great-name manufacturers... setting an amazing performance record in countless applications from phonographs to kitchen fans to pumps. If dependability is your aim, Model "A" is your motor!



MODEL	HP 3500 RPM	LOCKED TORQUE in.-oz.	MAXIMUM TORQUE in.-oz.	FREE SPEED RPM	AMPS FREE	WATTS FREE	A	B
A-3-CW	1/500	0.7	1.1	3360	.375	10	3/8"	1 3/8"
A-3-CCW	1/500	0.7	1.1	3360	.375	10	3/8"	1 3/8"
A-4-CW	1/350	1.0	1.4	3380	.375	14	1/2"	2"
A-4-CCW	1/350	1.0	1.4	3380	.375	14	1/2"	2"
A-5-CW	1/180	1.7	2.7	3430	.460	17	5/8"	2 1/8"
A-5-CCW	1/180	1.7	2.7	3430	.460	17	5/8"	2 1/8"
A-6-CW	1/130	1.9	3.3	3430	.500	19	3/4"	2 1/4"
A-6-CCW	1/130	1.9	3.3	3430	.500	19	3/4"	2 1/4"
A-7-CW	1/100	2.1	3.8	3500	.530	20	7/8"	2 3/8"
A-7-CCW	1/100	2.1	3.8	3500	.530	20	7/8"	2 3/8"
A-8-CW	1/90	2.5	4.5	3480	.550	23	1"	2 1/2"
A-8-CCW	1/90	2.5	4.5	3480	.550	23	1"	2 1/2"
A-9-CW	1/70	2.7	5.3	3520	.620	27	1 1/8"	2 3/4"
A-9-CCW	1/70	2.7	5.3	3520	.620	27	1 1/8"	2 3/4"
A-12-CW	1/60	3.0	6.5	3500	.720	28	1 1/2"	3"
A-12-CCW	1/60	3.0	6.5	3500	.720	28	1 1/2"	3"
A-14-CW	1/50	3.1	7.0	3490	.730	33	1 3/4"	3 1/4"
A-14-CCW	1/50	3.1	7.0	3490	.730	33	1 3/4"	3 1/4"
A-16-CW	1/45	4.0	7.5	3490	.730	39	2"	3 1/2"
A-16-CCW	1/45	4.0	7.5	3490	.730	39	2"	3 1/2"

Write today for catalog sheet and quantity-price quotations.



THE GENERAL INDUSTRIES CO.

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from the
Editor's Mail

The "Direct-On" process

Gentlemen: The statement in the April issue of METAL PRODUCTS MANUFACTURING, "but to date no plant has turned over its entire production to this method of porcelain enameling," prompted my telephone call to you. . . .

We have been experimenting with our "Direct-On" process for some months and, for the past six months, have been in production 100 per cent as a jobbing shop using regular 20 gauge cold rolled steel from a large number of the steel companies throughout the country. During this period we have run 2 1/2 million square feet of steel by means of our process.

We feel we have made a tremendous break-through in the porcelain enameling industry because we are not using premium steels and are actually able to produce it at no greater cost than the present method.

Being a job shop we, naturally, run into many conditions such as shapes, steels, handling problems, etc., and yet encounter fewer hazards inherent to porcelain enameling than with the ground coat process. It is only a matter of time before the entire industry will have forgotten about the use of the ground coat process.

Harold T. King
Hanson Porcelain Enamel, Inc.
Hanson, Mass.

The reference in the first paragraph of Mr. King's letter is to an editorial comment in connection with the report, "What is happening in porcelain enamel . . . One coat white direct to steel," which starts on page 71 of the April, 1959 issue.

Arrangements have been made with Hanson Porcelain Enamel, Inc. to carry a feature article in a later issue of MPM, describing the "Direct-On" process as employed in this Hanson, Mass. plant.

The Editors

Keen interest in foam insulation

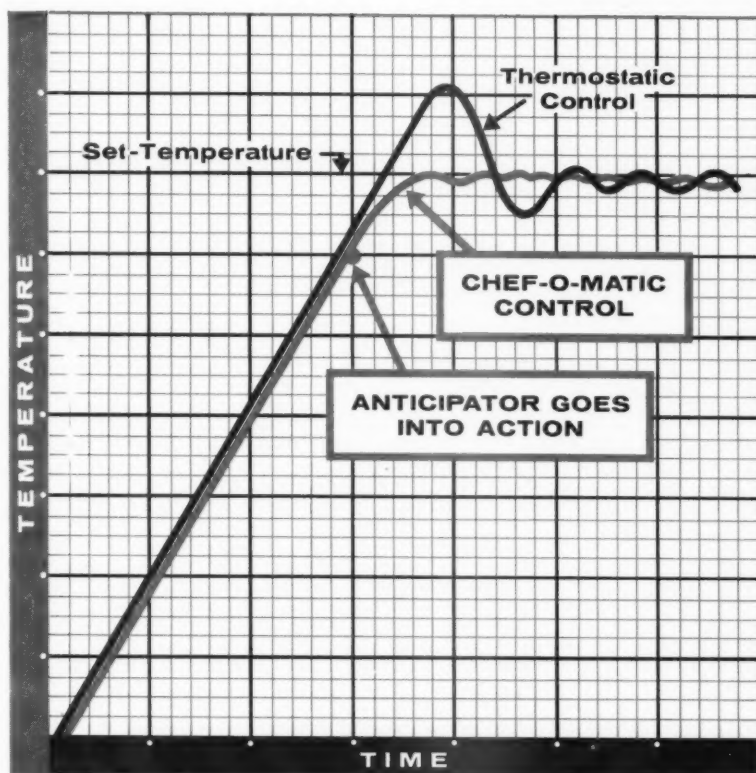
Gentlemen: Authoring a letter requesting special consideration and effort is quite difficult, but due to a mutual interest in foam insulation, I feel it is in order.

In the February issue of METAL PRODUCTS MANUFACTURING appeared a feature article pertinent to the unique insulating technique . . . (A production process for "foamed in place" insulated cabinets — The Dole Valve Co., Morton Grove, Ill.) Needless to say, much investigation and study has been done by all manufacturers of refrigeration equip-

to Page 21 →

The CHEF-O-MATIC THINKS AHEAD

for Closer Surface Element Temperature Control



Unlike conventional thermostatic controls, the Chef-O-Matic thinks ahead and tapers off temperature build-up in time to avoid overshooting the allowable maximum.

Thus, the cook can have complete confidence that sauces and other foods will not be spoiled by excess cooking temperature.



OTHER CHEF-O-MATIC FEATURES

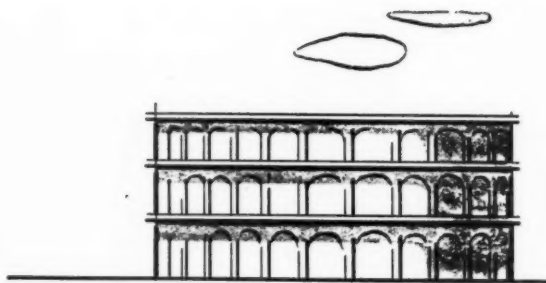
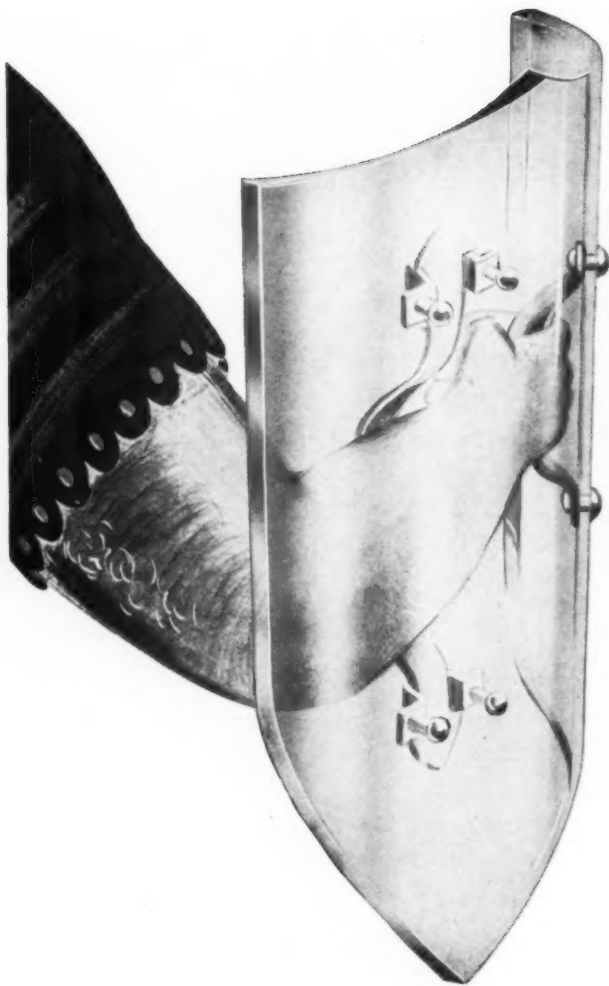
- Infinite number of precision settings, on a linear scale, in either direction of knob rotation
- Temperature control range—100°F to 450°F
- Single unit can control any wattage element up to 3500 watts, including split coil types
- User safety assured by low voltage system between sensor and responder switch
- Rugged sensor—withstands up to 800°F
- Automatically reduces wattage when cooking utensil is taken off surface element



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this *Glass* shield, while symbolic,

represents some of the things a master craftsman can do with glass. It can be bowed to fit any desired shape, it can be drilled and shaped to exact tolerances.

It can be tempered to impart extreme resistance to impact — that is why safety regulations demand glass as a safety barrier when danger exists.

Let glass improve the utility of your product while it beautifies it.



*Let Marsco's craftsmen-engineering team
impart to your product all the advantages of glass*



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- AIRCRAFT ACCESSORIES
- PHOTOGRAPHIC EQUIPMENT
- LIGHT LENSES
- DIALS & NAME PLATES
- TELEVISION EQUIPMENT
- INSTRUMENTS
- MEDICAL EQUIPMENT

Special shapes for: Instruments, Gauges, Household and Industrial Appliances.

MARSCO MFG. CO., 2909 S. HALSTED ST., CHICAGO 8, ILL.

Editor's mail

→ from Page 18

ment into the possible uses of urethane foamed in place insulation. We find that published articles, such as the aforementioned, are very important to our investigations. Occasionally an element of confusion arises as the result of typographical errors or our misinterpretation. Your article aroused several conflicting interpretations in two instances. I would appreciate your assistance in clarifying the following:

1. On page 27, the caption under the picture in the upper left hand corner reads: "To prevent attack of the foam mixture on the inner lining of the dispensers, petroleum jelly is spread around the upper inch of the liner." Is the petroleum jelly used as a release agent or as an anticorrosive agent? . . .

2. On page 28, the last sentence of the second paragraph reads: "A shroud of steel pipe is mounted to cover the mixing head . . ." (*Reference is also made to corrosive effect.*) Does the word *corrosive* have reference to attack on the operator?

3. On page 28, the picture in the lower right hand corner with a caption reading as follows: "The actual foaming takes place in about five minutes, but the dispenser cabinets are kept in jigs of the type shown here for at least 18 hours to allow the foam to harden completely." This is somewhat contrary to text. Is this jig time actually 18 hours or 18 minutes?

Acknowledgement of the letter and questionnaire will be greatly appreciated.

C. Wernitz, Construction & Fabrication
Research Engineer
Hussmann Refrigerator Co.
St. Louis, Mo.

1. On Page 27, the petroleum jelly is used as a release agent. It has been found that it is much easier to remove the petroleum jelly than the polyurethane foam after it has adhered to the dispenser.

2. On Page 28, the steel pipe shroud is mounted on the mixing head to provide a chamber for mixing resin and catalyst. It also acts as a funnel to introduce the polyurethane into the dispenser cabinet. No corrosive attack on metal from the insulating material has been experienced.

3. A typographical error—the jig time is actually 18 minutes.

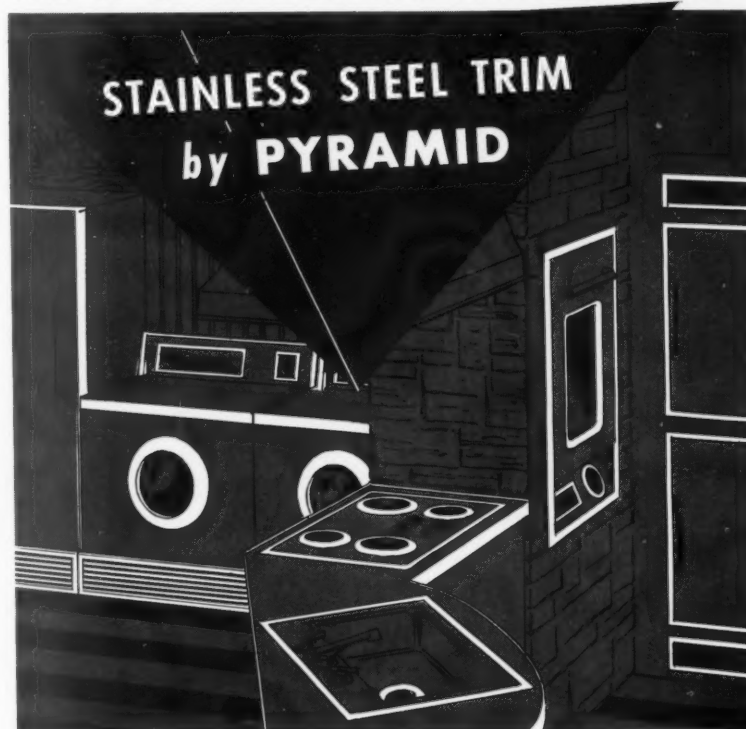
The Editors.

Wants reprints

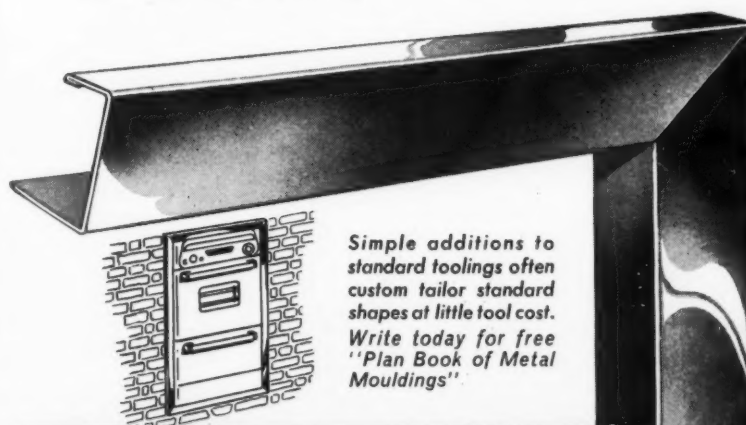
Gentlemen: Please send me two (2) reprints of "Vinyl to metal" from your March issue. Also, two (2) reprints of "New roller coater line for finishing metal strip," from the April issue, and two (2) reprints of "Vinyl on steel embossed after application," from April issue of METAL PRODUCTS MANUFACTURING.

R. F. Renkin
Research & Development Engineer
Sharon Steel Corp.
Farrell, Pa.

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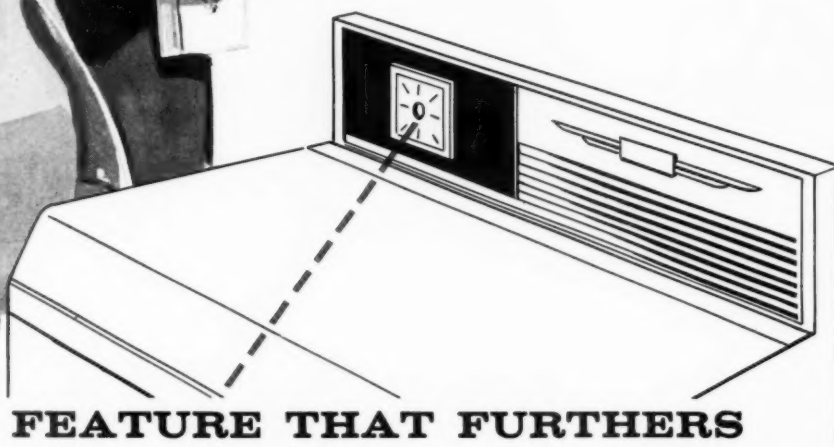
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**... A FEATURE THAT FURTHERS
YOUR SALES FUTURE**



SERIES 7000: New, improved Dryer Timer. 25 amp., 230 v heater rating; 1/3 HP., 115 v motor rating; AC only. Approved by UL and CSA. One piece shaft assembly ensures alignment and prevents loosening.

In today's keenly competitive appliance sales market, lasting product performance and reliability keeps your customers for you . . . and assures you of future sales.

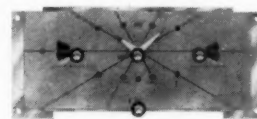
Like all Lux Timers, the new 7000 Series Dryer Timer shown here is a keen, precision instrument, with accuracy and reliability guaranteed by the Lux Life-Test through which a prototype of every timer model must pass before that model is marketed.

Today, as always, appliance fashion and unfailing function are the keys to continuing customer satisfaction, and the Lux Timers' imaginative styling and engineered construction fully satisfy on both counts.

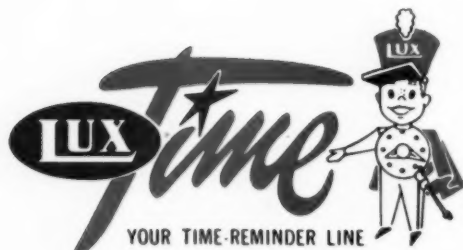
Equip your dryer, range, washer with a Lux Timer—the built-in extra effort necessary in today's competition.



SERIES 5840: Combination fully automatic Range Timer and one hour electric Minute Minder with exclusive bell chime reminder signal.



SERIES 5866: New slimtrim. Combination fully automatic Range Timer and one hour electric Minute Minder. Exclusive bell chime reminder signal.



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PHOTO BY KARESH OF OTTAWA

"The Sharon kind of steel quality eliminates a big production problem"—JAMES E. STILES, vice president of production, Macomber Incorporated, Canton, Ohio.

"Into each of our finished products goes hundreds of pounds of steel, a great deal of manpower, and the Macomber reputation for rugged dependability," says James E. Stiles, vice president of production at Macomber, one of America's leading producers of steel joists, roof decking, and structural steel framing.

"For this reason our supply of mill steel must meet our specification as a single inch of bad steel can cost us hundreds of dollars. Over the years we have learned to depend on the consistent quality of steel from Sharon Steel Corporation, Sharon, Pa."



SHARON *Quality* **STEEL**



The role of thermostats in appliance design

AN MPM STAFF FEATURE

a review of design factors that should be considered in the application of thermostats to appliances

EXCLUSIVE
FEATURE

THE USE OF THERMOSTATS as a means of control for appliances has grown immensely since the early days when electric flatirons, re-

frigerators, and toasters first used them. Present day appliances employ thermostats in many ways to regulate temperature, or to protect vital components from overheating due to some malfunction.

Thermostats are used to regulate the flow of gas or liquid fuels and to switch electric current on and off for the ultimate purpose of controlling temperature. Change in temperature of the surroundings or of the appliance causes the thermostat to actuate a switch or a valve to bring the medium under control to the proper level.

Because of the great variety of operating conditions that can exist in even the same type of appliance, the selection of a thermostat is sometimes difficult. Proper selection involves an accurate knowledge of every conceivable factor that has a bearing on the functioning of the thermostat.

One of the biggest problems in pres-

ent day appliance design, according to well-informed sources, is the lack of consideration given to the type of thermostat to be used. Frequently, an appliance is designed to the point where tools and dies have been released and designs have been approved by the sales department before a thermostat is selected. Often the smallest and cheapest thermostat is selected, which frequently results in poor application. Sometimes the thermostat cannot be moved even $\frac{1}{4}$ -inch when plans are final.

While the design of an appliance is in progress, careful consideration should be given to every possible element that could affect control. When complete information is available, preferably well in advance of final design approvals, the right thermostat to do the job can be more easily selected. Usually the lowest priced and most conveniently-sized thermostat is readily available when planning is done in advance. A sample outline of a procedure to follow in the selection of a thermostat will be given later in the article.

The question of selecting an adjustable or unadjustable thermostat must be decided before final plans are made.

Three separate phases exist in the approach to any temperature control problem: (1) Proper design of the system to

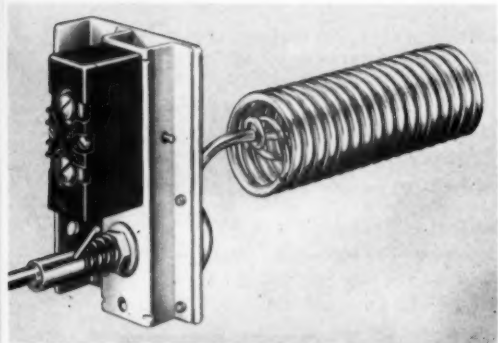
be controlled; (2) selection of the right thermostat; and (3) proper location and installation of the thermostat.

A well-designed appliance has a great effect on the operation of a thermostat. For example, a clothes dryer should be designed so that the flow of heated air is as uniform as possible through the drying chamber. If the temperature were not uniform, then the thermostat, regardless of where it was located, would not be measuring correctly. This would be true of any appliance, though the design of a clothes dryer would obviously require more careful planning than an electric iron.

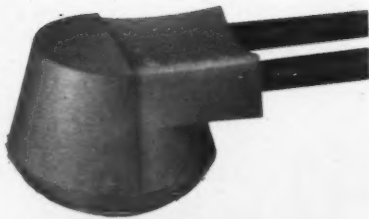
Proper design of the system to be controlled actually results in two things. The first of these is a system that will do the job intended for it. The second is a well-designed burner unit for a range, a water heater, a refrigerator, or a combination washer-dryer that will not only perform its task at top efficiency, but will lend itself to the most accurate thermostatic control.

How control is affected by physical location of thermostat

Basically there are six arrangements of the load, the thermostat, and the heating or cooling source. The "load" is the medium being controlled, and the "thermostat," as used here, is the temperature sensing element, or bulb, of the thermostat. The arrangements with their advantages or disadvantages are as follows: 1. *Locating the thermostat between heater and load.* This arrangement is often desirable for installations where the heat demand of the load may be alternately steady and variable. The thermostat can thus respond to changes at the load or the heater without excessive lag in either instance. This arrangement tends to reduce cycling frequency,



This model of power element type temperature control has an air temperature bulb suitable for air conditioning applications. This control can be made for a wide variety of temperature applications from -100° F. to $+500^{\circ}$ F. Liquid expansion power elements are employed to actuate the control. These power elements are available in various styles and capillary lengths to meet requirements. Photo courtesy Penn Controls, Inc.



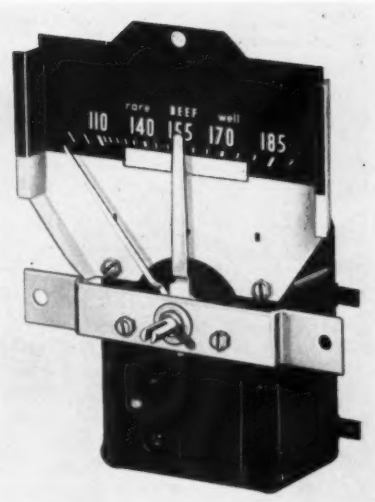
A fixed temperature, low cost snap action bimetal control designed and developed for refrigeration and air conditioning applications where a sealed unit is required. The unit is sealed against moisture, dust, and other contamination through the use of an epoxy resin compound at both the lead and cup openings. Its minimum mean temperature differential can be supplied in ranges of 10 to 40° F. Either of two ampere ratings is available — 25 or 10 amps. Photo courtesy Spencer Thermostat Div., Metals and Controls Corp.

and is a compromise between having the thermostat either near the heater or near the load. When heat demand is steady, placing the thermostat near the heater will provide close control of the load. Should heat demand vary, however, this arrangement will give wide temperature fluctuations. If this occurs, possibly the thermostat should be placed nearer the load.

2. *Locating thermostat near the load, with heater distant from load.* In a dynamic system, (changing temperatures) this arrangement has definite advantages in that it can sense changes in heat requirements at the load in a minimum of time. The time required to sense the action of the heater may be rather long, but the mean temperature at the load will remain relatively constant. This arrangement can be preferable in a dynamic system due to the ability of the thermostat to maintain a constant mean load temperature. The service life of the temperature controller should be high because a relatively-slow cycling rate exists. In a static system, this arrangement will not provide a narrow temperature differential because of the distance between the heater and the thermostat. The heat wave cannot be transmitted rapidly, which results in greater variations of controlled temperature.

3. *Thermostat near heater, with heater distant from load.* This arrangement can give excellent control in the vicinity of the load. The thermostat responds very rapidly to temperature changes at the heater, thereby preventing any extreme temperature fluctuations near the load. Prolonged heating or cooling periods are eliminated. One characteristic of

A roast control-indicator gauge and internal meat temperature sensing thermister built into a probe. With this control, the indicator can be set to the desired degree of "doneness" (140° F. for rare roast beef or 170° F. for well done roast beef, et cetera), and the control will bring the roast to the desired finish point, holding the oven temperature there until the dinner is ready to be served. After the sensing probe is inserted into the meat, the oven temperature is set at, say, 325° F. The oven temperature will rise quickly to that temperature and remain there until the roast control indicator pointer reaches the roast anticipation point, approximately 45° below the desired degree of doneness. As the meat heats up, the thermister causes the indicator pointer to rise. This electrical information is used to move the indicator pointer as well as to bias the oven thermostat. The mechanical motion of the pointer also operates the control gradually to increase the voltage applied against the biasing of the biasing heater, whose function is to "fool" the oven thermostat. Briefly stated, oven temperature is controlled by the combination of ambient oven temperature and roast control supplied temperature. The roast control reduces the actual ambient oven temperature so that it becomes the same as the internal meat temperature when the roast is completed. Photo courtesy King-Seeley Corp.

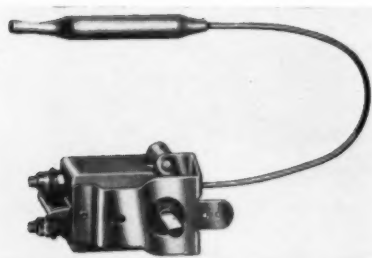


this system is that the controller will cycle quite rapidly. Service life of the thermostat's moving parts may be re-

duced somewhat, depending on the particular design and application. In a dynamic system where the heat demand of

An expanding probe thermostat as applied to a water immersible electric fry pan made by Landers, Frary and Clark. This unit is fully adjustable and removable. The probe thermostat employs the principle of differential expansion rather than a laminated bimetal unit. The switch employs creep action contacts and offers a very narrow temperature differential for close temperature control. Photo courtesy Stevens Mfg. Co., Inc.





A remote bulb temperature control designed especially for use with electric heaters, such as wall heaters, baseboard convection heaters, and portable heaters. Its switch mechanism combines a very narrow ($1\frac{1}{2}^{\circ}$ F.) temperature operating differential with an electrical rating of 5,000 watts. When the temperature of the return air passing over the remote bulb rises, the liquid in the bulb expands, causing the contacts in the switch to open, turning off the heat. Photo courtesy White-Rodgers Co.

the load may be continually changing, this arrangement would not give optimum control. Because of the lengthy heat-transfer path between the control element and the load, temperature changes in the vicinity of the load are not detected readily. Accordingly, temperature in the vicinity of the load can vary appreciably outside of the desired limits.

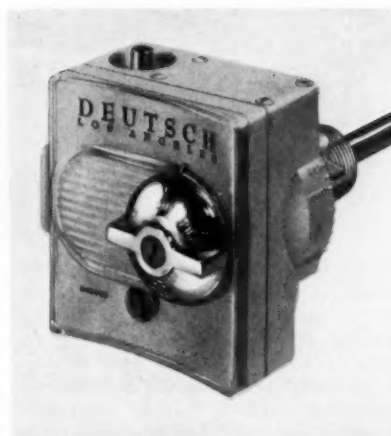
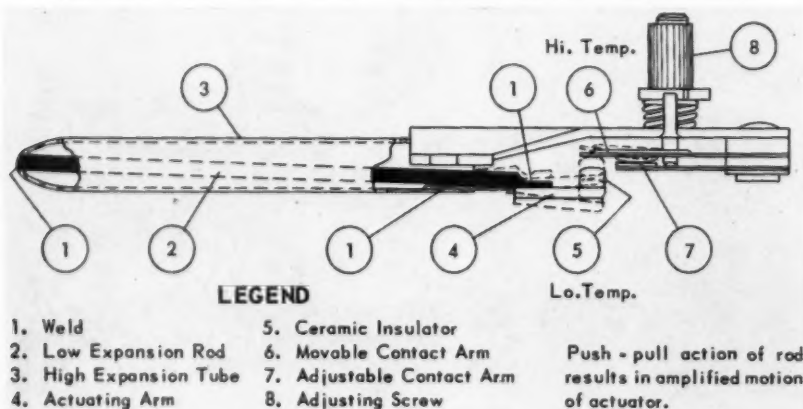
4. Locating heater at load, with thermostat distant. Probably this is the poorest heater-thermostat arrangement

that can be selected from the standpoint of obtaining good control. However, it does emphasize the importance of proper location of the load, heater, and thermostat when close control is desired.

The load is subject to the widest possible temperature fluctuations, due to its proximity to the heater. The fact that the thermostat is distant introduces the maximum possible amount of thermal lag between the controlling and controlled elements of the system. Consequently, the load experiences extreme undershoots and overshoots, since the thermostat is unable to monitor temperature close to the heater. Also, with the thermostat located so far distant, system cycling frequency will be reduced appreciably, further jeopardizing control accuracy.

5. Heater distant from load, with thermostat extended between them. This arrangement is practical only for liquid-filled bulbs or differential expansion thermostats which are temperature sensitive along their entire length rather than at a single point. Certain sensors inherently respond to changes in temperature at only a single point. This type of sensor will not operate satisfactorily in this arrangement. When the proper thermostat is used, however, this arrangement can be extremely useful. The thermostat will respond rapidly to temperature changes either at the heater or at the working area, and provides a high warm-up rate without overshoot, and a reasonably-fast cycling rate.

Diagram showing the component parts of a probe-type, adjustable thermostat for use as an interchangeable control for such appliances as fry pans, sauce pans, griddles, deep fat fryers, and baking ovens. This thermostat consists essentially of a high expansion tube and a low expansion rod. At one end, the two elements are welded and sealed. At the other end, the rod is welded to a movable actuating arm, which amplifies the difference in the expansion rate of the two elements. The tube expands on the heating cycle, causing the low expansion rod to pull the arm toward the center of the tube. As heating continues, the force causing the contacts to separate increases rapidly. On cooling, the opposite occurs. By this operation, the thermostat cycles on and off and maintains the temperature of the appliance at a controlled value. Photo courtesy Metals & Controls Corp.



An automatic gas water heater thermostat incorporating full 100 per cent safety shutoff and safe lighting by means of a thermomagnetic safety control. The thermal control is a bimetallic thermo element (copper tube and invar rod). It employs air-gap construction which prohibits water from entering gas lines or controls. Photo courtesy Deutsch Controls Corp.

6. Close grouping of thermostat, heater and load. When this layout is feasible, it gives excellent control under most conditions, and is particularly desirable when the load changes frequently. The heat transfer paths from the work and heater to the thermostat are short and, as a result, thermal lag is slight. The small mass of heat transfer medium keeps system inertia low. Rapid cycling hastens recovery of the system from thermal upsets.

Selection of the thermostat

The primary guide to selection of the correct thermostat is to determine what it must do. Generally, there are four functions or purposes served by thermostats:

1. On-Off — A simple control to hold the temperature at a constant level.
2. Anticipatory — A more complicated control that holds a constant temperature by means of a proportion based on the size of the load. As load increases, the percentage of energizing time is automatically increased.
3. High Limit — For overheat protection where the thermostat shuts off power in case of excessive heating.
4. Graduating or Throttling — Opening or closing of contacts or valves gradually, based on a time cycle.

Each of these categories can be further broken down into pre-set (for a single temperature) and adjustable.

Each of the basic functions of a thermostat has certain requirements that

indicate how such controls should be used. For instance, simple control of temperature by on-off thermostats calls for a device with long contact life and a narrow temperature differential.

Thermostats used for throttling or time delay control, as well as those used for anticipatory control, are relatively complicated. Such units usually have ambient temperature compensation and thermal mass provisions. Thermostats used for range burner control are built to automatically compensate for varying ambient temperatures such as those created by ovens. In addition, changes in loads raise or lower the heat input based on the speed of temperature rise. An example of this would be two quarts of water in a heavy-gauge kettle compared with a pint of water in a smaller utensil. The thermostat would sense a slower rate of temperature rise in the larger load and would automatically increase the power input to the burner.

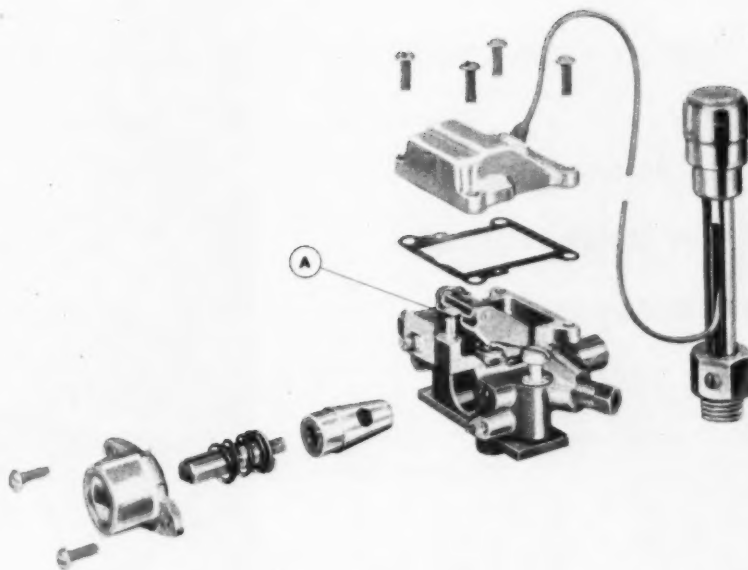
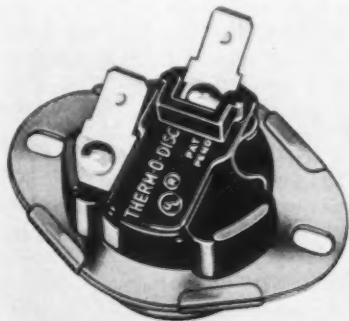
Heat transfer important factor

Some thermostats are designed for efficient reception of conducted heat. Others are responsive to heat conveyed by air-flow convection. The mechanical design of the thermostat determines the mode of thermal sensitivity, and is an important factor in selection for function.

Materials employed in the construction of the thermostat must be selected with consideration for the highest temperature to which the thermostat will be subjected. Otherwise, excessive heat

This thermostat operates on a free bi-metal disc principle with a temperature calibration that is factory preset and non-adjustable. It can be obtained for operating temperatures up to 350° F. and with normally open or normally closed contacts, surface or watertight mountings, and enclosed or exposed bi-metal discs. General applications are clothes dryers, washer-dryers, room and unit heaters, central heating furnaces, air-conditioning and ventilating units.

Photo courtesy Thermo-Disc, Inc.



An exploded view of an automatic gas top burner control. This thermostat is designed to permit manual adjustment of the burner flame size, as well as temperature setting by the use of one dial. It is a combination gas cock and thermostat. This unit may be used for the control of top burners for pilot or by-pass operation, or both. Photo courtesy Robertshaw-Fulton Controls Co.

may cause deterioration of vital parts and cause failure of the device.

Other factors affecting specifications

A realistic approach on the part of the equipment designer in setting specifications has a great effect on cost and practicality. The relative importance of each requirement should be established. For instance, a slight reduction in load rating for a thermostat may permit the use of a smaller and lower-cost unit without penalizing the performance of the controlled equipment. Slight widening of the temperature differential may effect a considerable economy in thermostat cost.

An application check list

A sample of a typical application data sheet in use in the industry will serve to illustrate the many factors to be considered in the proper selection of a thermostat.

1. What process or equipment is being controlled?
2. What must the thermostat do?
3. What environmental requirements exist? Vibration, shock, humidity, corrosive atmospheres, etc.
4. What is the relationship of the thermostat to the heater, load, or other essential parts?
5. Voltage — AC or DC.
6. Current — resistive, inductive.
7. Maximum possible temperature differential, degrees F. open and closed.

to Page 92 →



A room thermostat for controlling a central heating system that employs a different concept of thermostat styling and design. The long thermometer and large numerals result in a thermostat which is easier to read. The heater in this thermostat is of the series type.

Photo courtesy Detroit Controls Div.

Four snap-acting bimetal disc thermostats. At the left is a hermetically sealed 2-6° F. differential thermostat for crystal ovens; second from left is another hermetically sealed unit. A semi-enclosed control for percolators is second from right, and the large unit at right is a 1 1/4-inch diameter high current capacity thermostat rated for 5,000 watts, 250 volts ac. Photo courtesy Stevens Mfg. Co., Inc.



Operating details of an anti-repeat press control

years of design, laboratory and field testing result in reliable, safe press device

PRESS CONTROL requires the ultimate in reliability, because the consequences of accidental unexpected operation of the press can be so serious in terms of injury to workmen, damage to expensive dies, or both. Static control devices seem a logical step in development of press control, since in addition to features already possessed by standard press control devices, static control would add the feature of elimination of moving parts which can wear, jam, break, or otherwise possibly cause trouble. However, it has not been easy to design a static press control which does retain the features of the conven-

pany is now marketing its "Transmag" anti-repeat press control, which is based on a transistor, a special pulse trans-

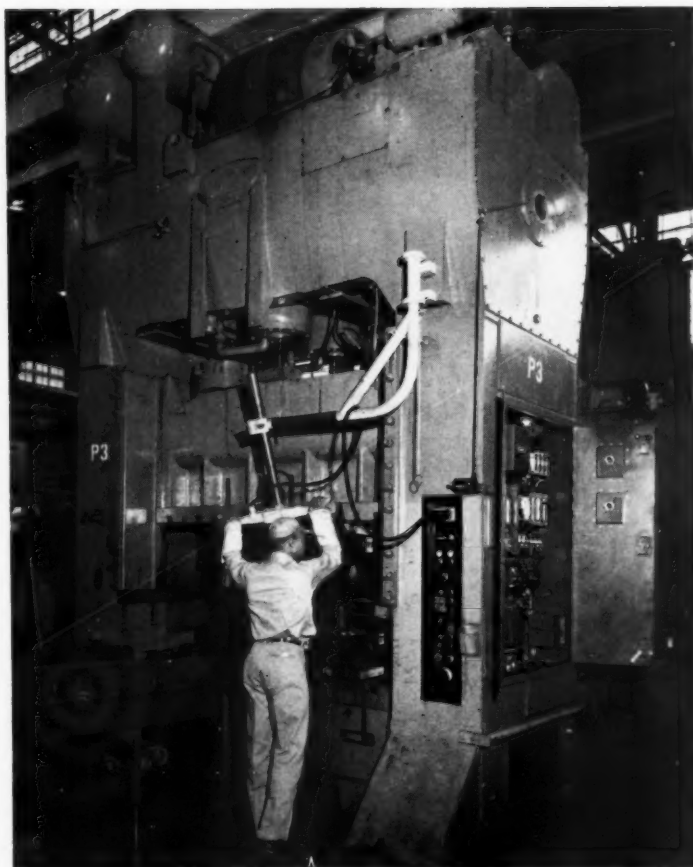
stroke, when an operator can no longer get his hands into the danger area, LS2 and LS3 close, permitting the press motion to continue while the operators release the run buttons and prepare for the next cycle of operation.

Near the end of the up stroke of the press, LS1 and LS4 open momentarily. If, at that time, the "run" buttons are still depressed, CR1 will drop out, followed immediately by CR2, and the press will stop.

It cannot begin its new stroke until the run buttons have been released, to allow CR1 to pick up, and then depressed again. This feature guards against operators taping or jamming one or more buttons in the "run" position. Note that switches and buttons break both sides of the line—an important safety feature.

Fig. 2 . . . major details of four-unit anti-repeat control

To accomplish the same action, the anti-repeat control has four units. One, a power supply, is not shown in Fig. 2 for reasons of simplicity. The other three are known as the latch unit, the power unit, and the hold unit. The transistor, of the PNP type, is in the



by *P. A. Zarleng* • DEVELOPMENT ENGINEER, CLARK
CONTROLLER CO., CLEVELAND

tional control utilizing relays. After several years of design, laboratory testing, and field testing, Clark Controller Com-

former, and two magnetic amplifiers.

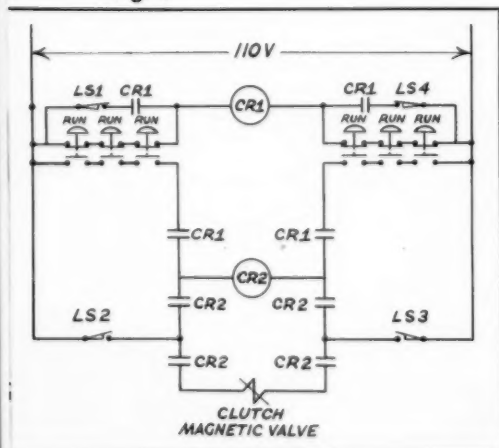
To understand the operation of the control, it will help to review the operation of the standard type of press control.

Fig. 1 . . . basic control circuit for press control device

At the top of the press stroke, LS1 and LS4 are closed, LS2 and LS3 are open. CR1 is normally energized. CR2 is energized as soon as the "run" buttons are depressed, starting a new press stroke. If at any time during the down stroke the "run" buttons (or any one of them) are released, CR2 will drop out and stop the press. Since all operator's hands must therefore remain on the "run" buttons during the down stroke, none of them can be in danger between the dies.

Near or at the bottom of the down

Fig. 1



latch unit. The four limit switches, two in each side of the line, operate as already explained.

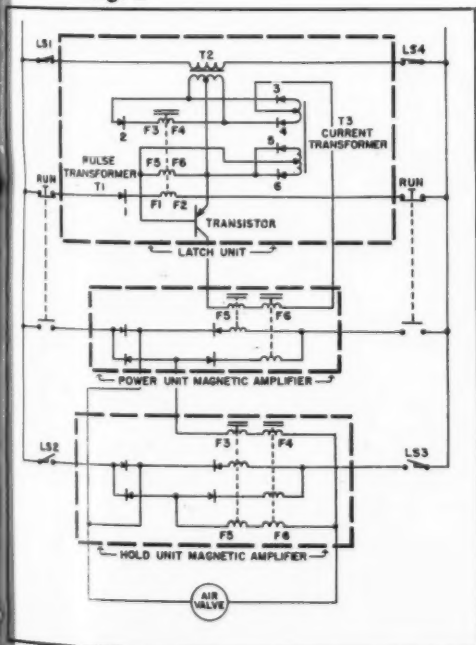
The positive center tap of T2 and the negative center tap of T3 provide output to the signal winding of the power unit magnetic amplifier, through the emitter collector circuit of the transistor, when LS1 and LS4 are closed. But no current flows because the transistor will not pass current until a base current is provided.

T2 and T3 also provide excitation for the winding F3-F4 of the pulse transformer T1. Winding F1-F2 of this transformer is excited with a half-wave dc current through Rectifier 1 and the normally-closed contacts of the "run" buttons. Depressing the "run" buttons breaks this circuit, causing a sudden flux reversal in the pulse transformer, which momentarily induces a voltage in winding F5-F6 such that F6 is positive. This winding is across the base circuit of the transistor so a small base current will flow, starting a dc current in the collector circuit and the winding F5-F6 of the power amplifier.

This current also flows through the primary of T3. It is a dc current but it flows alternately in each half of the winding so that it will induce an ac current in the secondary of T3. This is rectified and applied across the transistor emitter-base circuit bolstering the effect of the original pulse. Thus, the transistor becomes in effect a switch maintained closed by feedback current from the secondary of T3.

Once the base circuit is interrupted,

Fig. 2



even momentarily, this feedback ceases and the transistor returns to its normal "open circuit" condition. Releasing the "run" buttons would cause this, since it would reclose the circuit to F1-F2 of the pulse transformer producing a flux reversal which would induce a voltage in F5-F6 with F5 positive. This would oppose the feedback current and cancel its effect.

Similarly, when LS1 and LS4 open briefly at the top of the press stroke, the latch unit would reset to its original state. Before it can be turned "on" again, LS1 and LS4 must close and the "run" buttons must be released and then reclosed.

The power unit is supplied from the 110-volt line through the normally-open contacts of the "run" buttons. With the buttons depressed, the power unit will provide a signal to the air valve solenoid provided it is receiving a signal from the latch unit, which it does while the "run" buttons are held down, and until LS1 and LS4 open.

Once the air valve magnets are energized, the air valve current flows through F3-F4 in the hold unit. This prepares the hold unit for conduction by reducing its bias. When the press nears the bottom of its stroke and LS2 and LS3 close, the hold unit receives power from the line. Then, when the "run" buttons are released or the power unit is shut off by removal of excitation from the latch unit, the hold unit takes over the supply of power to the air valve. The reason the hold unit only supplies the valve if the latch unit is off, or the "run" buttons are released, is that it is designed to provide a lower voltage than the power unit, enough to hold the valve magnets in their operated state, but not enough to pull them to this state. Thus, the hold unit will operate only after the power unit has operated.

When the power unit shuts off, the hold unit continues to keep the press operating, maintaining itself in an "on" position because the load current passes through F5-F6 providing self-excitation. At the top of the press stroke, of course, all units turn "off" and the press stops, ready to begin a new cycle when the "run" buttons are depressed again.

EDITOR'S NOTE:

The wiring diagrams shown in connection with this article have been simplified for clarity in description and do not represent the actual circuits of press controls. The actual circuits are more complicated because they include such additional features as provision for inching, provision for bypassing of one or more "run" buttons, prevention of operation by accidental bypassing of all "run" buttons, etc.

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FEATURE

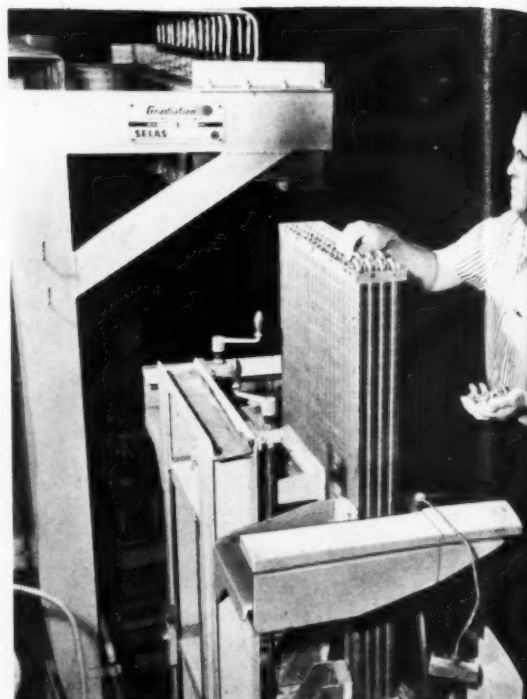
Automatic, gas-fired tube return bend brazing recently permitted the Air Conditioning and Refrigeration division, Worthington Corp., to set up at the new Decatur, Alabama plant, a production line for assembly of 3-ton, 5-ton, and 7½-ton heat exchangers, without the need for skilled welders.

When the Decatur plant was opened a few years ago, we decided to manufacture our own units to simplify production scheduling, to maintain close control over quality, and to avoid possible difficulties in transportation.

The principal problem was the need for skilled welders. Only an experienced welder would know how much heat was required, and how fast to run a torch

PHOTOS COURTESY SELAS CORP. OF AMERICA

(Right) — Operator places tube return bends in the ends of the hairpin tubes while the heat exchanger is in the positioner of the brazing machine. When operator pushes "start" button, heat exchanger is moved under special burner which brazes all joints simultaneously. At completion of braze, burners idle and positioner returns to charge-discharge position. On some exchangers, fifty-five tube return bends are brazed simultaneously.



(Below) — Heat exchanger assembly line on which press (extreme left) stamps out fins that are assembled to hairpin tubes and expanded on conveyor (along wall at right). Vapor degreaser is at center, automatic brazing machine at right. Pressure testing table is directly in front of press.

by *Norman L. Boisvert* • CHIEF INDUSTRIAL ENGINEER, AIR CONDITIONING & REFRIGERATION DIV., WORTHINGTON CORP., DECATUR, ALA.

along the tubes and bends to get a gas-tight and strong joint. We therefore investigated the possibility of using an automatic machine for this operation. . .

When the process development laboratory of an equipment manufacturer pro-

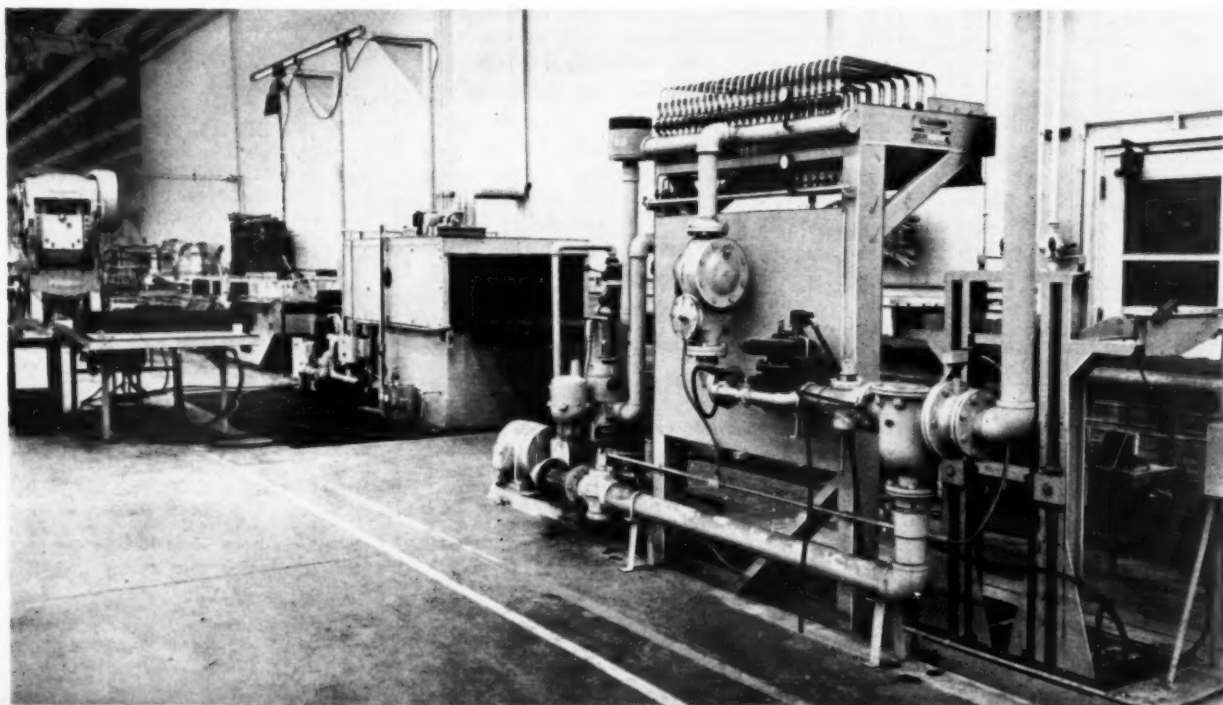
duced uniformly-acceptable joints on a test setup, a machine was designed and built to the specifications set up by Worthington, and subsequently installed in the heat exchanger assembly line.

The assembly line starts with a 60-ton

punch press, into which a roll of .010-gauge aluminum, 12 inches to 22½ inches wide is fed to form the fins of the exchangers.

The fins are fed onto an assembly

to Page 85 →

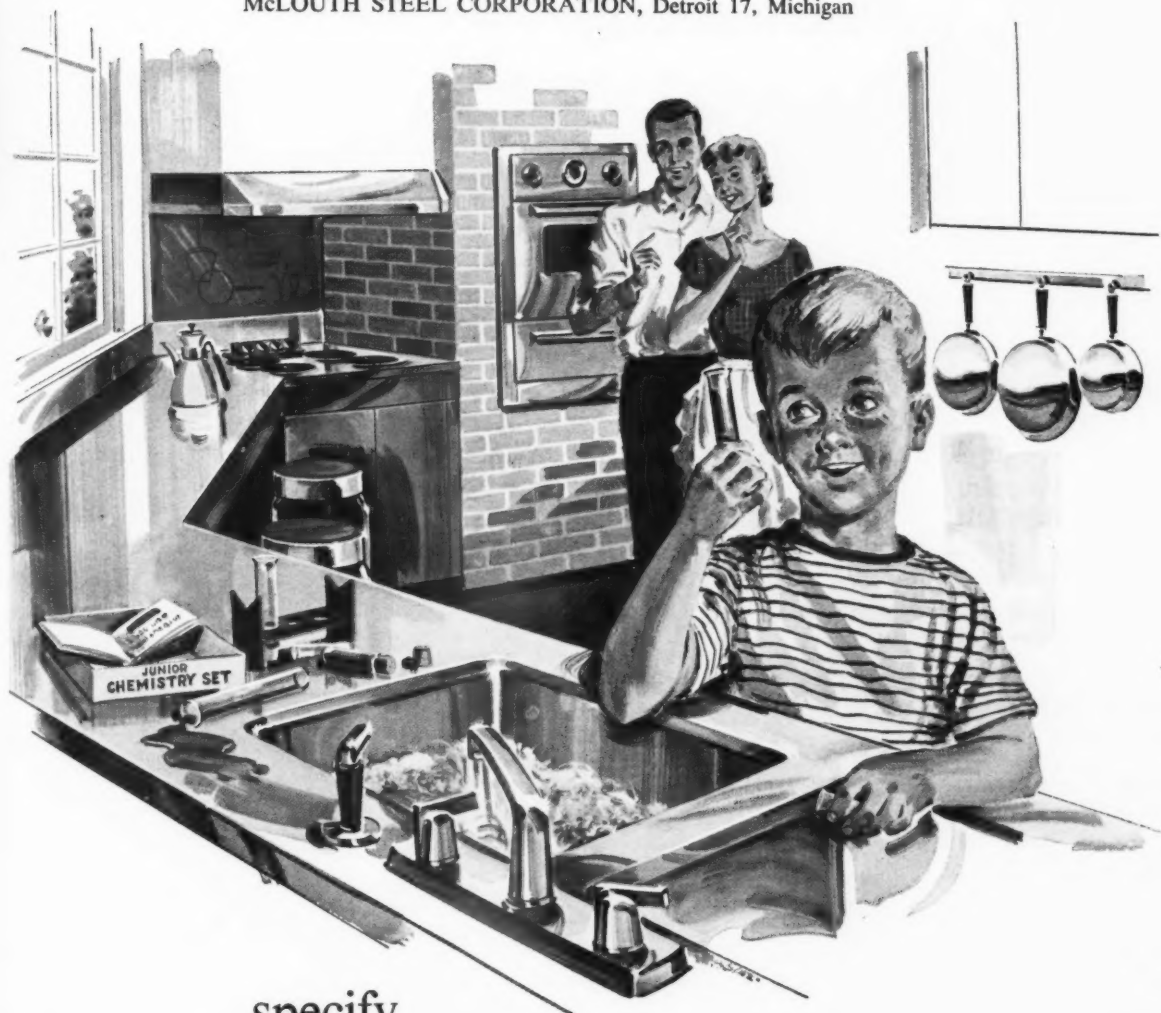


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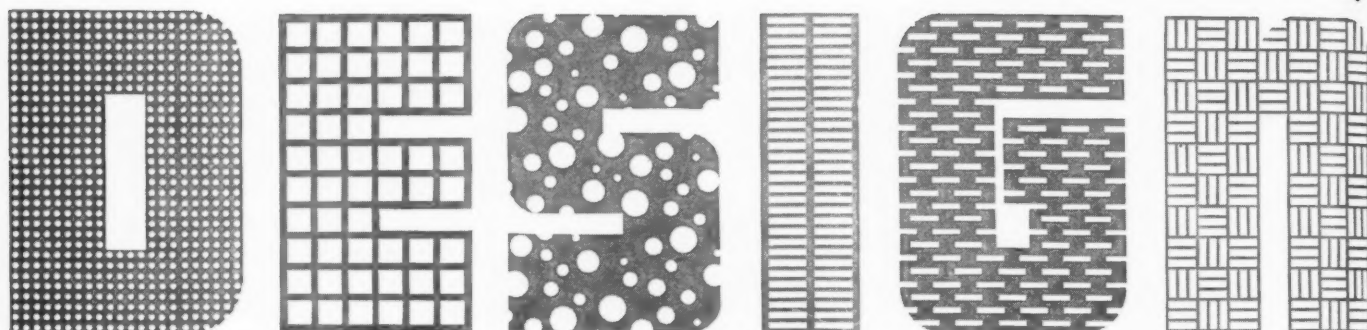
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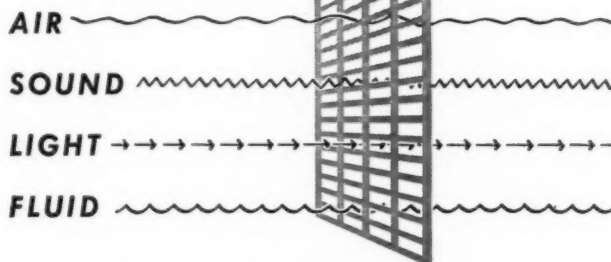
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New automatic paint finishing line for data processing machines

INTERNATIONAL BUSINESS MACHINES Corp. recently installed a complete new paint finishing system at its Poughkeepsie plant for painting components of its computers, punched card ma-

chine, proof machines, punched paper tape machines, and other data processing equipment. The new system is designed for the application of the relatively-new textured vinyl finish, and is one of the first large-scale systems for this type of coating. The installation enables IBM to handle all its own finishing, whereas previously, work had to be subcontracted because production requirements had outstripped the capacity of existing facilities.

by Allen S. Dawe • J. O. ROSS ENGINEERING DIV.,
MIDLAND-ROSS CORPORATION

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The new line eliminates previous

manual transfer of work from the phosphate to the two finish-coat lines, and provides a modern new air make-up system in lieu of the previous one which, at times, was inadequate for the

Production scheduled one month in advance

Production in the paint finishing department is scheduled about a month in advance, with daily adjustments as required. Parts vary widely in size and range from those which can be held in

All motor start-stop buttons and oven and air makeup recorder controllers are located on one central panel just outside the paint finishing room.

the hand to six-foot panels. The overall conveyor length is some 1,350 feet. Work hooks are on 16" centers, and normal conveyor speed is 12 feet per minute. Thus it takes about one hour and 50 minutes for a part to travel through the entire system, and rack-loads are completed at the rate of about eight per minute.

The new system comprises a racking area, metal cleaning and preparation machine, dry-off oven, paint finishing room, bake oven, and auxiliary equipment.

Empty racks are hung from the system's conveyor in the racking area and loaded with parts. Some parts have special racks designed for their particular size and shape. Once the parts are

racked, they are not removed from the line until they have been completely finished.

Metal cleaning and preparation

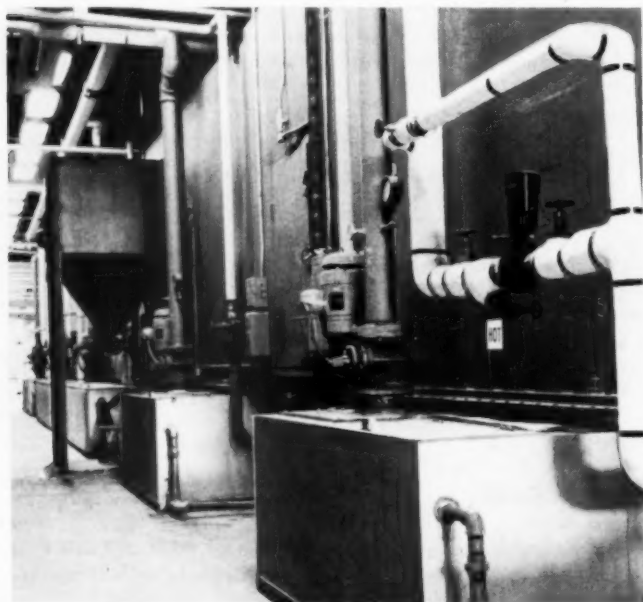
Parts are first conveyed into a 112-foot long, five-stage metal cleaning and preparation machine where they are successively subjected to a 60-second alkali spray at 155-180° F., a 60-second hot water rinse at 140-180° F., 60-second phosphate coating process at 135-160° F., 30-second cold water rinse, and 30-second chromic acid rinse at 140-160° F.

Spray sections are interspersed with drain sections which return excess solutions to their respective tanks beneath the various spray sections. Solutions are pumped from these tanks to piping systems having multiple-nozzle outlets along both sides of work travel. Alkali cleaner and hot water rinse tanks have 15-hp pumps, whereas the phosphate coating, cold water rinse, and chromic acid rinse utilize seven and one-half-hp pumps.

Each end of the machine is equipped with a vestibule to prevent spray from being carried into the room. The vestibules have one-hp exhaust fans at the top which vent both machine vapors and room air to atmosphere, thus creating a barrier which minimizes the escape of machine spray into the room.

At the phosphate stage, a settling tank is used to precipitate the sludge formed by the action of the phosphate on the metal.

Side view of metal cleaning and preparation machine, showing tanks which contain the various solutions. Elevated tank precipitates sludge formed in the phosphatizing stage.



Nine-minute cool-off period follows dry-off oven

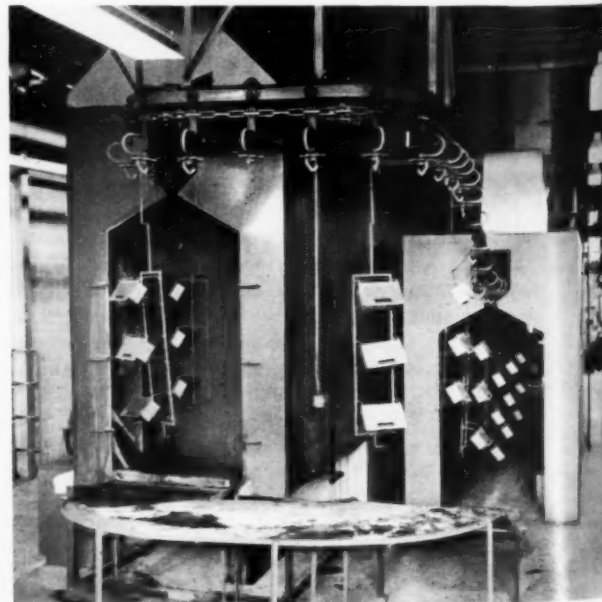
After leaving the metal cleaning and preparation machine, the work is immediately conveyed into a 48-foot long dry-off oven where it is dried at 350° F., and then allowed a nine-minute cool-off period during which it travels to the prime-coat spray booths. It is important that parts enter the dry-off oven promptly after metal cleaning to prevent oxidation. Also, a fairly lengthy cooling period is desirable following dry-off to avoid the poor results which might be expected if paint were applied to metal above room temperature.

Colorful finishing room

Spray booths are located within an enclosed room which is maintained under slight positive pressure to prevent infiltration of plant dusts. The walls of this room are equipped with windows and the spray booths themselves are partially enclosed in glass. This gives an openness to the installation, and also facilitates showing visitors through the plant and explaining the processes without opening doors and interrupting production.

IBM, incidentally, has painted the paint finishing room in an unusual combination of colors selected for their aesthetic values. These include rose for the spray booths, Swedish red for structural work and carmel blue, lime yellow and cocoa brown for various other pieces of apparatus and equipment.

View showing discharge of metal cleaning and preparation machine, and entrance to dry-off oven. Distance between units was minimized to avoid oxidation.



Makeup air is heated by steam coils in the winter and filtered through medium at right before being ducted to the paint finishing area.

Painting sequence for textured vinyl finish

PRIME COAT . . . Within the paint finishing room, work travels first to two 12-foot long prime-coat booths side by side but facing in opposite directions. In one booth, surfaces facing in one direction are sprayed, and in the other booth, the opposite surfaces are painted.

At times, however, one man can spray the entire part and the second booth is not manned. The prime coat is applied to a thickness of $\frac{1}{2}$ to $\frac{3}{4}$ mil, and has an approximate viscosity of 17 seconds in a #4 Ford cup.

Paint collected by the water curtain is separated from the water by a continuously-moving cheesecloth filter located in a pit beside the booths. The paint is disposed of (a market is being sought for it) and the water is recirculated. A two-hp pump circulates the water at each booth, and seven and one-half-hp fans exhaust solvent-laden air from the booths. Make-up air is ducted directly to the booths from the air make-up fan.

After leaving the prime-coat booths, parts travel openly within the paint finishing room for a three-minute flash-off period prior to receiving the first coat of vinyl.

FIRST VINYL COAT . . . the first coat is applied to a wet film thickness of 8-10 mils at a viscosity of about 45 seconds in a #4 Ford cup. The booth is 40' long and is manned by three men, each of whom applies paint to each part. Two three-hp pumps circulate water within the booth, and two ten-hp fans handle the air exhaust. Following application of the first coat, the parts are conveyed through an inclined tunnel to the roof-oven where they make one eight-minute pass at 200° F. and return for the second coat at a booth similar to the first one. The first coat is not baked

Three pairs of tanks circulate paint to the prime coat booths, first coat booth and second coat booth. Room is designed for additional tanks, should additional colors be used in sufficient volume to warrant their installation.



but passed through the oven for flash-off of solvent.

SECOND VINYL COAT . . . The second coating is also applied to a wet thickness of 8-10 mils, but at a viscosity of about 90 seconds. Again, three men spray all parts to build up the desired thickness. The end man is responsible for all parts, and is allowed extra time to apply a complete final spray. Paint is filtered from the water at the first and second-coat booths in the same manner as at the prime-coat booth, with the exception that paper instead of cheesecloth is used as the filtering media. Following application of the second coat, parts travel openly within the finishing room for a two-minute flash-off period prior to entering a "texture booth."

TEXTURE BOOTH . . . The texture booth is a small one-man booth in which a mixture of solvents at about 15-seconds viscosity is sprayed on the finished parts in the form of a very fine mist for the purpose of controlling the gloss and texture of the finish. Next, the parts travel through an inclined tunnel for a two-minute flash-off period on the way to the bake oven.

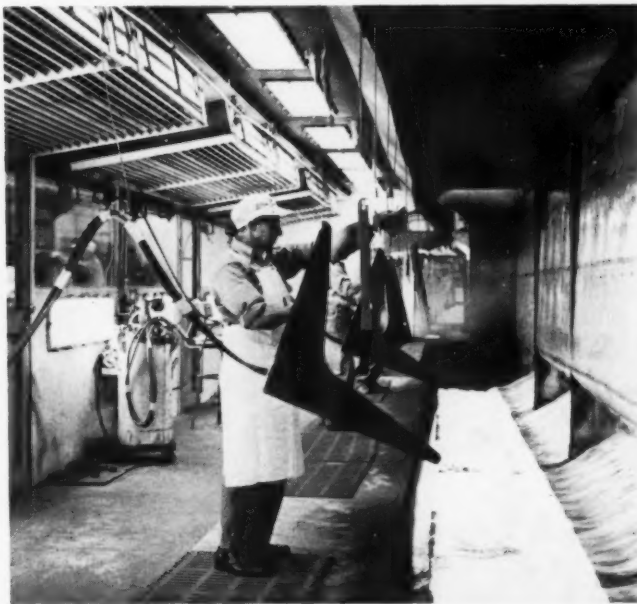
Gas-fired, direct-heat oven

The parts travel for eight minutes at 200° F., as in the case of the first coat. Then, over a six-minute period, they are brought up to 345° F., $\pm 5^\circ$, and are baked at this temperature for 14 minutes. They descend via an inclined duct to the de-racking area, being cooled

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Following the prime coat, parts enter the first vinyl coat spray booth, where the finish is applied at a wet film thickness of 8-10 mils.

Three men spray each part in both the first and second coat spray booths. Note the size of the water wash spray booths and the excellent overhead lighting system provided.



ARI holds reorganization meeting

Air-Conditioning and Refrigeration Institute lays plans for future industry development; Copeland's "Rudy" Berg heads new officer's group

AN MPM STAFF REPORT

MEMBERS of the Air-Conditioning and Refrigeration Institute met at The Homestead, Hot Springs, Virginia, May 4-6 to consider important changes in organization and procedures for their trade association. Suggestions for the new organization setup and procedures were the result of a study by a planning committee consisting of R. K. Serfass, Westinghouse Electric Corp., chairman; and Paul M. Augenstein, Airtemp Div., Chrysler Corp.; Rudy Berg, Copeland Refrigeration Corp.; Russell Gray, Carrier Corp.; Henry M. Haase, York Div., Borg-Warner Corp.; Thomas Hancock, The Trane Co.; L. N. Hunter, National-U.S. Radiator Corp.; U. V. Muscio, Fedders Corp.; John W. Norris, Lennox Industries Inc.; W. A. Siegfried, Superior Valve & Fittings Co.; and Herman F. Spoehrer, Sporlan Valve Co.

Two points for consideration were changing of the Institute's fiscal year

and a complete change in the method of dues assessment.

New officers group includes three vice presidents

Rudolph G. (Rudy) Berg, vice president of Copeland Refrigeration Corp., Sidney, Ohio, was elected president of ARI, to succeed Don V. Petrone, president of Typhoon Air Conditioning Co.

Other officers elected include three vice presidents: Russell Gray, vice president of Carrier Corp., Syracuse, N. Y.; L. N. Hunter, vice president of National-U. S. Radiator Corp., Johnstown, Pa., and R. K. Serfass, general manager of the Air Conditioning Div., Westinghouse Electric Corp., Staunton, Va.; and a treasurer, W. H. Aubrey, vice president of Frick Co., Waynesboro, Pa.

The new president of ARI has served the association as vice president for the past year and has been chairman of its

Tax Committee for the past three years. He has been with Copeland for 25 years, and has been active in ARI and its predecessor, Refrigeration Equipment Manufacturers Assoc.

Room Air Conditioner

Section dropped

The Institute's board of directors voted during the Hot Springs meeting to inactivate the Room Air Conditioner Section of ARI. National Electrical Manufacturers Association recently formed a Room Air-Conditioner Section and ARI president Berg reported that, after thorough discussion of points of common interest relating to federal excise taxes, a community of interest had been established between the two associations regarding the air conditioning industry, and it was agreed to form a liaison committee made up of members of both groups to consider matters of common interest.

Future meetings in fall

Plans have been developed for a "conference-type" session with leading speakers on refrigeration and air-conditioning, to be held in connection with the 11th Exposition of ARI at Atlantic City, N. J., November 2-5. With a "conference-type" session giving equal em-

Awards for distinguished service to the air-conditioning and refrigeration industry were made to, left, H. B. Thorndike, Detroit Controls Div., American Radiator & Sanitary Corp., by H. F. Spoehrer, Sporlan Valve Co.; and to, right, S. E. Lauer, retired chairman of the board, York Corp., by M. M. Lawler, Worthington Corp.



The ARI board of directors in session.





JONES, JR.

MPM PHOTO

phasis to refrigeration and air-conditioning, it is hoped to attract architects, consulting engineers, and other specifiers and buyers of the industry's products to the Atlantic City meeting.

It is planned that the future annual meetings of ARI will be held in the fall instead of the spring, with the time and place of the 1960 meeting yet to be announced.

AN MPM INTERVIEW WITH

R. G. (Rudy) Berg

PRESIDENT OF ARI

Question: What do you feel the reorganization plan of ARI will do for the industry?

The objects of reorganization were to serve the public by promoting a recognition of the benefits of air-conditioning and refrigeration and confidence in the industry's products and services, and to assist the members in every lawful way in the promotion and achievement of the objectives. To this

end, among other things are the following principal areas of activity: (1) public relations; (2) collection and dissemination of information; (3) establishment of equipment and product standards and safety codes; (4) development of market for industry products; and (5) relations with government agencies, other trade associations, and industry groups. This program should establish ARI as a voice of the industry.

Question: What is the status of the program?

The program has been approved in principle by the membership of ARI. This program, therefore, will now be expedited, including the evaluation of a new, suggested dues structure for members. This will be voted upon for formal, final acceptance at the November meeting in Atlantic City.

The investment by the individual companies in ARI will be such, under the new program, that each will have a greater interest in participating in the activities pertaining to their own individual products.

Question: What should be the practical results of the reorganization program?

The new program, as outlined to the ARI membership, is of paramount consideration in solidifying the industry and presenting a unification of thought and action for the benefit of the individual manufacturers and for the benefit of dealers, distributors, contractors, builders, and the ultimate user of air-conditioning and refrigeration equipment.

It seems very evident to the membership of the ARI that a greatly-accelerated pace of activity is a requirement in order to keep up with the overall expansion of the industry and its manufacturers. It is felt ARI and the industry as a whole must assume a very progressive attitude for the future, due to the pace of expansion, both in existing products and in new products that were not dreamed of five years ago. For example, utilization of refrigeration is in-



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Electrical Rating:
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WRITE FOR BULLETIN 665

THE MERCOID CORPORATION
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cluded in the government missile program, electronic computers, and a variety of mobile applications. It is the purpose of the new ARI program, not only to meet these existing requirements, but to keep an eye on possibilities for future applications which may not even be in prospect today.

AN MPM INTERVIEW WITH

Coit Lytton

CHAIRMAN, UNITARY
 AIR-CONDITIONER SECTION

Question: Inasmuch as you were chairman of the UAC Section during the development of the certification program, will you comment on this activity? For

example, what is the purpose of the certification program?

The program is designed to assure the buying public that the ratings on equipment are correct, to give added assurance that the industry is interested in the certainty that the equipment will meet the standards established, to serve as a "rating" platform under all equipment produced, and to further assure that the buyer will receive an honest dollar's worth of equipment for each dollar invested.

Question: What is the principal change from former individual rating methods?

According to standards established in 1957, a basic method of Btu rating is used to the exclusion of the "meaningless" horsepower rating. One result

to Page 54 →



Left to right are: F. J. Kreissl, Detroit Controls Div., American Radiator & Standard Sanitary Corp.; Mrs. Kreissl; Lester Aurbach, vice president, Industrial Publishing Co.; Mrs. and Mr. F. G. Coggin, Detroit Controls Div.; and Mrs. Aurbach.



George S. Jones, Jr., ARI Managing Director; Mrs. & Mr. Don R. Meckstroth, Westinghouse Air-Conditioning Div.; and Mrs. & Mr. Paul Wycoff, Airtemp Div., Chrysler Corp.



Left to right are Carl Ahlheim, Robertshaw-Fulton Controls Co.; Fred Hitchings, General Chemical Div., Allied Chemical Corp.; Mrs. & Mr. Frank Lucard, Pennsalt Chemicals Corp.; Mrs. & Mr. A. H. Clem, Pennsalt Chemicals Corp.; and Luke Morgan, Robertshaw-Fulton Controls Co.

Record attendance at Architectural Metal Manufacturers annual convention

THE NATIONAL ASSOCIATION of Architectural Metal Manufacturers held their 21st annual convention at New Orleans, La., April 12-17. Executive secretary Bill Wilson reported that the attendance of some 285 persons set a new record for the association.

Not only did the overall registration set a new attendance record, but all of the general sessions and division meetings were well attended by active groups.

Monday saw the start of the official functions with a program that consisted of: the national meeting in the morning; guest speaker, Edward Maher, vice president, public relations division, National Association of Manufacturers, speaking on "The outlook for conservatism" at the noon luncheon; and the Tablet and Letter Division meeting in the afternoon.

The Iron and Steel Division held its meeting on Tuesday. Guest speaker was A. M. Baltzer, director, Small Business and Associations Program, Industrial Department, National Safety Council. His talk was on the "Architectural Metal Industry Safety Report." He pointed out that the accident rate in the architectural metal industry is entirely too high and illustrated several important steps that members should take to improve the situation. The Iron and Steel Division voted to have the Armour Research Foundation of Illinois Institute of Technology conduct a research and development program for them. All members of the division will be assessed to cover the costs. Tuesday's luncheon speaker was J. Stewart Stein, president, Construction Specifications Institute, who spoke on "The future of CSI in the industry."

The Non-Ferrous Division meeting was held on Wednesday morning. Guest speakers were Edmund R. Purves, executive director, American Institute of

Architects, and Glenn F. Ballard, chairman, Improved Construction Practices Committee, National Association of Credit Management. They both talked on the subject of "Retained percentages." Ballard pointed out that, currently, there is some \$5 billion being retained. He feels that a change of retained percentages would release some \$2.5 billion in working capital to the construction industry which would greatly stimulate the construction business. The American Institute of Architects has not recommended a change in the retained percentages, and Ballard stated that being passive on this program for reduced retainage is the same as being against it. Purves rallied to the defense of the AIA, and then pointed out that he believed it was up to interested parties to go to "the grass roots" and sell individual architects and local AIA chapters on this change so that they, in turn, would voice their feelings to the national association.

The Metal Curtain Wall Division meeting was held on Wednesday afternoon. Guest speaker was W. Dudley Hunt, Jr., Senior Editor, Architectural Record magazine. He spoke on the "Possibilities of curtain wall design." He stated that the trend is away from all-window or all-metal walls toward a combination of materials. He believes that a number of different systems of walls should be developed and does not believe an optimum standard is feasible. He went on to say that he feels curtain wall is here to stay and will take over more of a structural role in building. There will be new materials and designs to match an increase in demand for variety in design.

The Metal Curtain Wall Division was introduced to the new Metal Curtain Wall Manual by the Market Development Committee chairman, William H.

Withey, Armco Steel. It is hoped that this Manual, which will be distributed to architects, will help establish recognized standards in the industry as established by NAAMM.

The Store Front and Entrance Division meeting was held on Thursday, and there was a final general meeting on Friday morning.

Paul C. Crawford, vice president, Wooster Products, Inc., Wooster, Ohio, was re-elected to serve as president of NAAMM for the year 1959-60.

Other officers and directors elected were: John T. Edwards, Jr., The J. T. Edwards Co., Columbus, Ohio, vice president of NAAMM and president of the Iron and Steel Division; S. M. Olson, C. W. Olson Mfg. Co., Minneapolis, Minn., vice president of NAAMM and president of the Non-Ferrous Division; E. P. Benson, A. J. Bayer Co., Los Angeles, Calif., vice president of NAAMM and president of the Tablet and Letter Division; Ralph L. McKenzie, Flour City Ornamental Iron Co., Minneapolis, Minn., vice president of NAAMM and president of the Metal Curtain Wall Division; D. D. Williams, Brasco Mfg. Co., Harvey, Ill., vice president of NAAMM and president of the Store Front and Entrance Division; William A. Boesche, The Ornamental Iron Work Co., Akron, Ohio, secretary of NAAMM; Emil M. Pollak, Illinois Bronze Works, Inc., Chicago, Ill., treasurer of NAAMM.

The following will serve as directors of NAAMM for 1959-60:

Louis F. Fontana, Irving Subway Grating Co., Inc., Long Island City, N. Y.; Mitchel Stern, Camden Iron Works, Camden, N. J.; Karl F. Jorss, Jr., A. F. Jorss Iron Works, Inc., Arlington, Va.; F. M. Knight, H. W. Knight & Son, Inc., Seneca Falls, N. Y.; Jack M. Roehm, Kawneer Co., Niles, Mich.; Dr. Norman Bienenfeld, The Alumiline Corp., Pawtucket, R. I.; Robert D. Borne, Riverside Architectural Metal Co., Davenport, Iowa; Sol Perlman, A. Perlman Iron Works, Inc., New York, N. Y.; Richard E. Stitt, Acorn Wire and Iron Works, Chicago, Ill.; Neil C. Dostal, Moynahan Bronze Co., Flat Rock, Mich.; W. Benton Lewis, Florida Steel Corp., Tampa Forge and Iron Division, Tampa, Fla.

CRAWFORD



PURVES



MAHER



BALLARD



BALTZER



Porcelain enamellers plan for increased business

quality verification for architectural porcelain,
"PEP" program, and color standards are discussed

AN MPM PRESSTIME REPORT

APPROVAL OF A RECOMMENDATION to appoint a committee of industry leaders to present a quality verification program for the architectural porcelain enameling industry highlighted the mid-year conference of the Porcelain Enamel Institute at Chicago's Edgewater Beach Hotel, May 13-14.

It was indicated that the appointments to the committee would be announced the following week by H. R. Spencer, Jr., president of the Erie Enameling Co., who is chairman of the Architectural Division. Industry members felt that quality verification is essential from the viewpoint of high standards, and details of the plan to be established were discussed by PEI Managing Director John C. Oliver and J. W. Vicary, president of the Ervite Corp.

The proposal to establish a quality verification program was approved in principal at the 1958 annual meeting of the Institute, pending the completion of a revised specification by the Architectural Porcelain Enamel Division. A presentation of these revisions, reviewed by E. L. McDonald, Ingram-Richardson Mfg. Co., was the lead-off report at the May 14 morning session.

The proposed quality verification program, which the PEI hopes can be developed to the extent of launching a six-month pilot run by the end of 1959, would be based on the principle of certifying, via unannounced inspections in the plants of participating companies, those whose production standards meet all requirements. Companies whose architectural panels are found by independent inspection to meet all aspects of the specified requirements would be certified as "quality verified" architectural enamel producers.

It was pointed out by one enameler that an effective specification or quality control program for architectural porcelain must include assembly and erection as well as manufacturing.

Industry-wide, standardized color system

At the Wednesday session, Spencer stated that, after two years of work by a color committee, the PEI color guide

program has been completed. From an original 350 colors submitted by architectural suppliers, the committee boiled the colors down to 50. Then, 47 colors were selected on the basis of:

- (1) Stability of the color in production
- (2) Producibility in minimum acid resistance of Class A (PEI standard)
- (3) Producibility in semi-gloss, in addition to gloss

All colors were submitted to leading frit manufacturers for a study of their practicability before approval, Spencer stated. The 47 approved colors will be reproduced on a printed color guide, which will also include six typical stipple finishes.

It is not anticipated by architectural enamellers that the standard colors will eliminate the use of a wide variety of additional colors selected by architects and users. It is felt that the use of the standardized color system by the industry will greatly simplify the color problem.

"PEP" promotion

In industry planning for increased business, announcement was made for an effectively-coordinated market promotion to be known as "Porcelain Enamel For Profit," or simply, "PEP." This promotion to establish porcelain enamel, as a finish, evolved through the War Chest program started earlier and the Frit On Steel program started in 1952. Selection of a new advertising agency for the promotion was made by the Market Development Committee headed by John McCord, Ferro Corp.

PEP's objectives are to promote porcelain enamel as an engineering material, to reach the public to pre-sell porcelain enamel, to reach with greater depth and penetrate the present market, and to promote new markets. Plans now call for a minimum five-year program with the entire industry, including both suppliers and producers, participating. The program was originally suggested by the operating division of the industry.

McCord stated that the usage of porcelain enamel in the appliance industry is on the downgrade percentagewise, though it still represents 65 per cent

of the porcelain enamel business. Thus, even though population growth is pushing total sales to the appliance industry up, there would seem to be room for much improvement here.

Session on costs

The entire picture of determining accurate costs was discussed at the General Enameling Session of the Mid-Year Conference.

In "A candid look at our industry," F. D. Danford, treasurer of Armco Steel Corp., stressed three main points to be considered when examining costs: (1) You should know the true cost of the items you produce. Without the true cost you will not be able to tell your real profit. (2) Producing a poor quality product is never an answer to reducing costs. (3) Collect your receivables. There is no profit in selling an item for which you do not get paid.

Functional cost accounting in steel and aluminum warehousing was discussed by William H. Lewis, president of Korhmel Steel and Aluminum Corp. A case study of the various cost problems and the plan adopted to meet these problems was presented by Lewis. One of the benefits in using this system, he states, is in determining those lines that are profitable and those lines that are loss items.

George J. Tasso of Ernst and Ernst, international public accounting firm, stressed the importance of preparing an annual operating forecast in any planned cost control program. It is important to know how close you are coming to your forecast, even if the figures indicate that you will be so far below the forecast you will be sustaining a loss. It is important to know this.

James W. Vicary, president of Ervite Corp., discussed "Cost problems, as seen by the porcelain enameler." Systems alone, regardless of how efficient, will not produce a profit, Vicary stated. "Two policies by top management determine the extent of a porcelain enameler's profit: the will to make a profit, and the courage to make a profit," he said. "Further, we have got to know our costs as a basis for assuming a fair profit."

Restaurant Show Has Variety

With a variety of displays ranging from an ultrasonic dishwasher to a complete kitchen at waist-level, the National Restaurant Assn.'s annual show played to packed houses at Chicago's Navy Pier, May 11-14. Attendance was estimated at more than 42,000 for the first three days, and total attendance, according to an NRA official, was expected to top the '58 figure by a wide margin.

THE CURIOUS AND PROBING MIND



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For nearly fifty years Pemco minds have used the factors of temperature and time to process inorganic materials. The materials they have created . . . the processes they have developed . . .

are responsible for many of today's products, finishes and colors that resist heat, abrasion, acids and alkalis.

How can Pemco serve you?

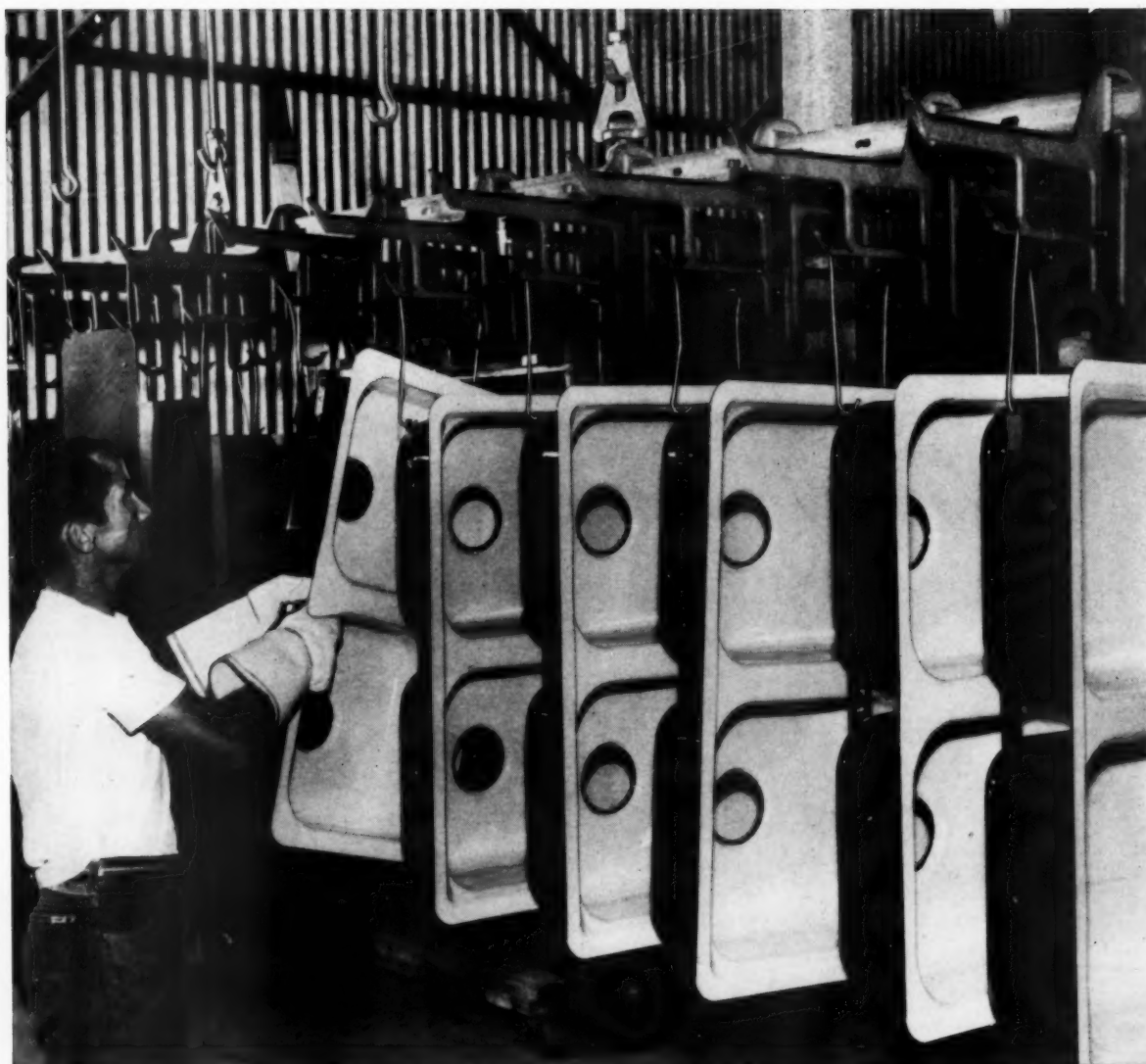
RESEARCH AND A FLAME

PEMCO



Ceramic frits, inorganic pigments, vitrifiable glass colors

BALTIMORE 24, MARYLAND



Inconel burning hooks bent from 3/32 in. dia. rod, support ware at U.S. Porcelain Enamel

Co., Los Angeles, California. Plant makes enameled plumbing ware, stove parts, signs.

“Hook up” to Inconel... for pileup protection, for ware safety

These 10-inch Inconel® nickel-chromium alloy burning hooks are proving their advantages again in the picture above, for one of the West Coast's outstanding manufacturers of high quality enameled products — the U.S. Porcelain Enamel Co.

This company's ware is carried into 1550°F furnaces on Inconel hooks. They're strong at burning temperatures; don't break or stretch under load . . . eliminate furnace pileups. And they form a tightly-adhering protective film — no flaking-off to spoil ware.

Inconel alloy is readily formed, welded into useful burning tools. Items like these hooks are often made in

the enameling shop itself.

Inconel alloy offers other answers to your need for long-lived burning tools — Inconel drop rods, shoe plates, and other “hot spot” equipment may well help lower your maintenance costs.

For information on prices, deliveries, get in touch with your nearest Inco Nickel Alloy distributor. He'll be found under “Nickel” listings in phone directories of all major cities.

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1. Fluid type (water soluble).
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New plant design for porcelain enamel on aluminum

**well laid out plant has up-to-date
equipment and processing methods**

(Above) — View of entrance of furnace showing ware in transit and infra-red lamps suspended over line.

A STRONG INTEREST IN COLOR, plus long experience in the aluminum field, led Harold Himmel and Leonard Goldfarb, Porce-Len, Inc., Hamden, Conn., into the area of porcelain enamel on aluminum. Now, they are co-owners of a highly-successful porcelain enameling operation.

However, before any moves were made, many months of research were spent learning processing methods from suppliers and visiting plants in the industry. At this point, a laboratory-size furnace was purchased with which Porce-Len could conduct its own research. As a result, a production furnace was built that would provide the utmost in careful temperature control for sharp color differential.

With much experience in aluminum

finishing behind them, these men knew the importance of utilizing the latest methods and materials for cleaning and etching aluminum. The batch-type method was employed because of the variety of sizes and shapes processed. Each of the five tanks used handle panels up to five by twenty-one feet. A non-etching solvent cleaner, a mild aluminum etchant at a temperature of 140° F., a 185° F. acid chromate bath, and an alkaline chromate bath comprise the metal preparation solutions.

Investigation now disclosed that automatic spray application would render the best results for color matching. Thus, a lay-down, pin-type conveyor with a capacity of 2,500 square feet per hour was used. The spray line accommodates sheets up to five feet wide and twenty-

Each of the five tanks handle panels up to 5 by 21 feet. A non-etching solvent cleaner, a mild aluminum etchant, an acid chromate bath, and an alkaline chromate bath comprise the metal preparation solutions.





(Left) — View of control panel and exit end of furnace.



(Right) — View of spray booth. Specific gravity pickup fluid pressure and atomization, as well as the weight of application, are carefully controlled to insure good coverage and color uniformity.

five feet long. Specific gravity, fluid pressure, and atomization pressure, as well as the weight of application, are carefully controlled to insure equal coverage and color uniformity.

Rigid control of milling

The mill department was planned to enable cross checking of all additions to the mill. Records are kept of lot numbers of oxides, frits, and other additions, and a full report must be made out by the compounder. After proper milling time, a sample of the slip is taken to the laboratory, where it is test fired and compared by using color difference meters and visual means.

If there is any discrepancy, another sample is taken from the mill, adjusted in the laboratory-size mill, and retested until the desired shade and gloss are obtained. A similar adjustment is made in the large mill and checked again to insure exact specifications. Enamel is ground to one gram residue on a 325-mesh screen from a 50 cc sample.

The furnace has a firing zone twenty-five feet in length, six feet in width, and five feet in height, with a temperature differential of approximately two and one-half°. The latter is highly important, since this makes color uniformity obtainable on panels up to twenty-one feet in length. Operation of the furnace is at 960 to 1,020° F.

Furnace either batch or continuous

When operated as a batch-type unit, the furnace can fire up to 3,000 square feet per hour with an overhead monorail conveyor feed. When used as a continuous furnace—lay-down, chain belt conveyors feed the ware from the spray machine to the furnace chain—it can fire up to 1,800 square feet per hour. Because of the air distribution system, close control with varying types of loads can be achieved.

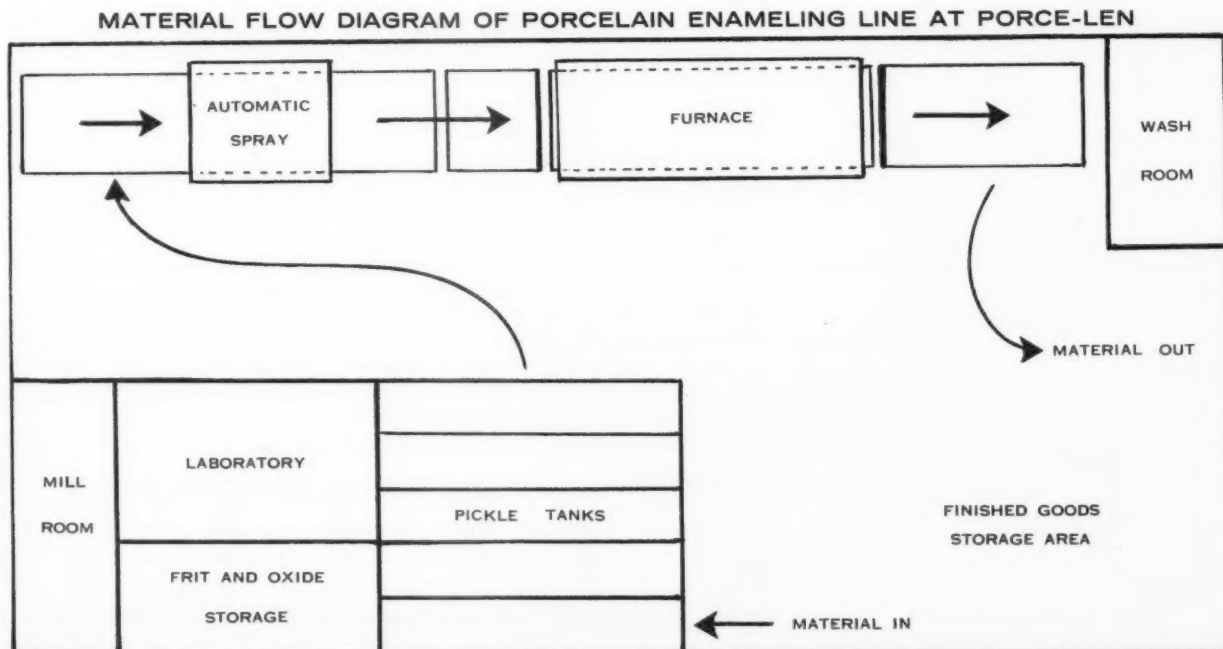
A feature of the plant operation is the precaution taken against contamination from lead-bearing frits, even though this is not considered to be a

serious hazard by most enamelers. Sloping floors slant towards a central drain to eliminate sweeping, and the entire plant is hosed down daily. In addition, a health program for employees has been instituted.

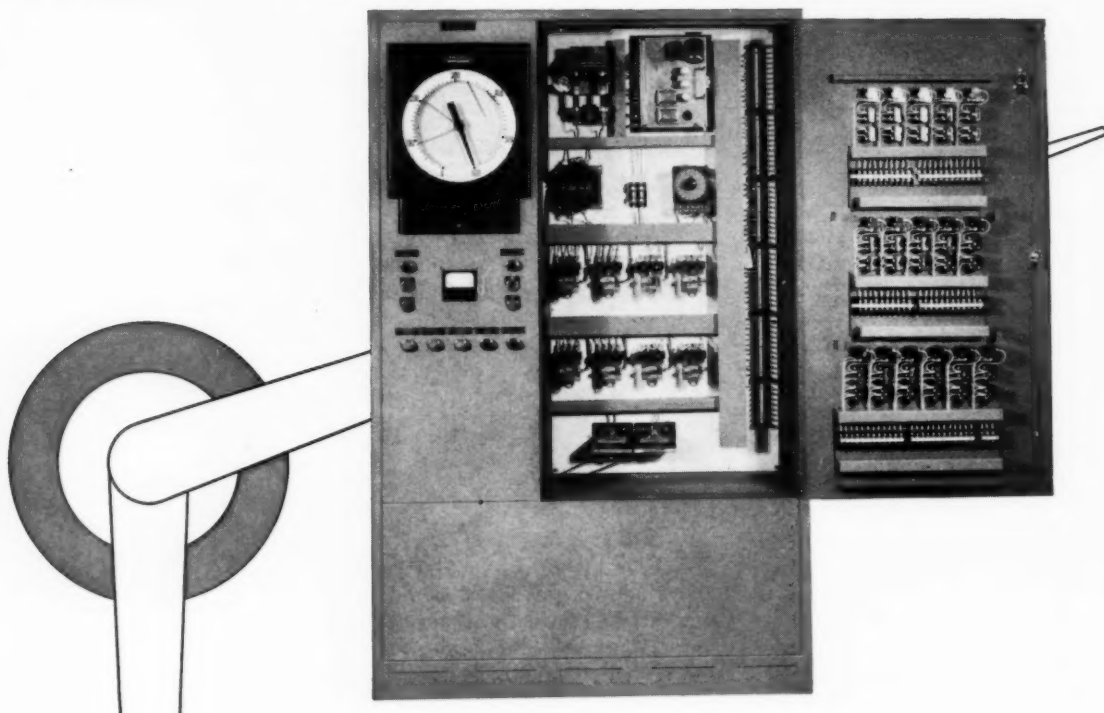
Porce-Len panels are available in a wide combination of cores, facings, colors, and textures. Some of the more commonly used materials are foam, asbestos board, plywood, fiber glass, and honeycomb in aluminum. Standard or special extrusions, as well as brake stock and formed shapes, can be porcelain enameled to specifications.

A great variety of custom colors are offered for porcelain enamel on aluminum, stainless, and aluminized steel.

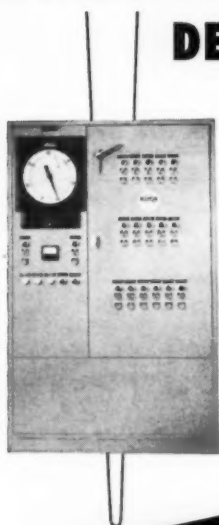
The editors wish to thank Adam Walsh of Porce-Len, Inc. for his technical assistance in connection with this article.



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**ENGINEERED for CONTROL,
DEPENDABILITY, QUALITY and SAFETY!**



A Modern Finish Baking Oven is not just an indiscriminate assembly of insulated panels, heating units, ducts, fans, blowers, motors, etc.

The Mahon Oven Control Panel, illustrated above, was engineered and built by Mahon for one Mahon Finish Baking Oven which was specially designed to meet the exacting requirements of a particular manufacturer. This is just one example of how each component is thoroughly engineered into Units of Mahon Finishing Equipment to insure quality construction throughout, functional dependability, positive control and maximum safety in operation.

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See Sweet's Plant Engineering File for Information, or Write for Catalogue A-659

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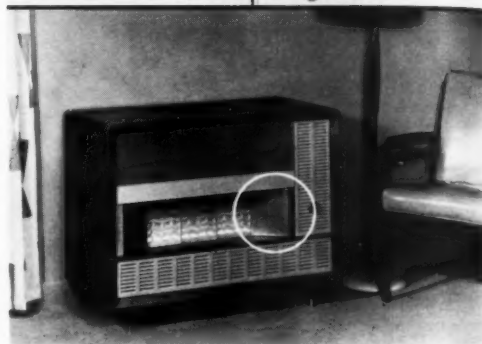
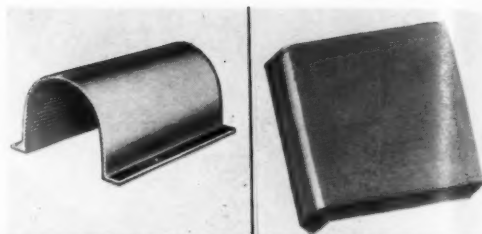


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of protection combines comprehensive
technical service and custom-formulation
of product finishes for all industry.



SELF-SERVICE DRYER, by Norge, is said to dry all types of fabrics at low temperature with a 120° air flow. The unit has a safety thermostat, metal clothes door gasket guard, safety knee door opener, and automatic door switch. Hair dryers installed in the background are for milady to dry her hair while she dries her clothes.

the MPM



EXTRUDED ALUMINUM hearthside (circled) posed some problems for Temco, Inc., Nashville, Tenn., until it was extruded half round (upper left in photo), then straightened, notched and bent, and holes punched (upper right in photo). The job was done by General Extrusions, Inc., Youngstown, Ohio.



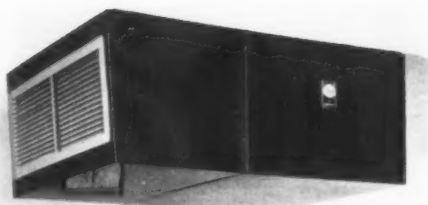
ECONOMY FOOD WASTE DISPOSER, announced by American-Standard, has new stainless steel cutting system which allows the cutter teeth to be reversed. All types of food may be deposited into the grinding chamber, it is claimed, and the unit has a built-in automatic overload protector and lifetime-lubricated 1/3 hp motor.

STAINLESS STEEL TRAILERS, by Fruehauf Trailer Co., utilizes stainless furnished by Allegheny Ludlum Steel Corp. A single medium-sized trailer uses 2,100 pounds of Type 201 stainless steel, and features horizontal corrugations and a unique rubrail configuration that adds to the trailer's strength and appearance. Sidewall panels, siderails, crossmembers, and clips are all electrically welded into a strong unit. There are more than 7,200 welds in the average sidewall on the trailer, and rivets, bolts, and screws are eliminated.

METAL KITCHEN FURNITURE, combining tubular metal legs, plastic table tops, and vinyl chair coverings in all-one-color, has been introduced by Daystrom. Four



... foto-news

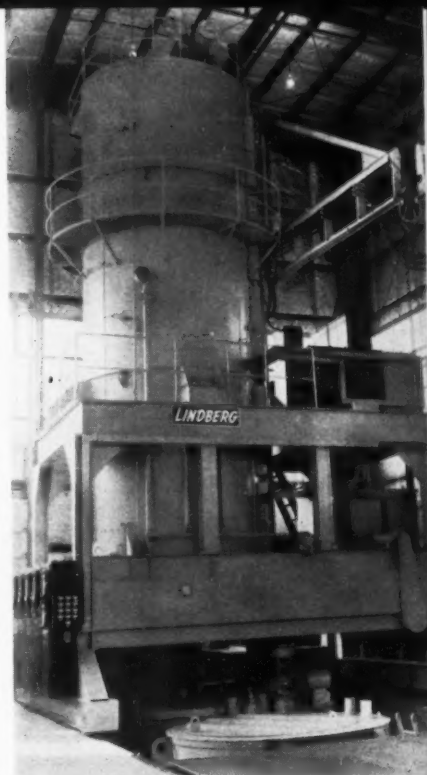


AIR-CONDITIONED COMFORT brings efficiency to this office through a ceiling-mounted Rheemaire horizontal air handler. The cabinet, which contains blowers, evaporator coils, and filters, is designed for connection with a condensing unit which may be mounted on the roof or on a ground-level slab.

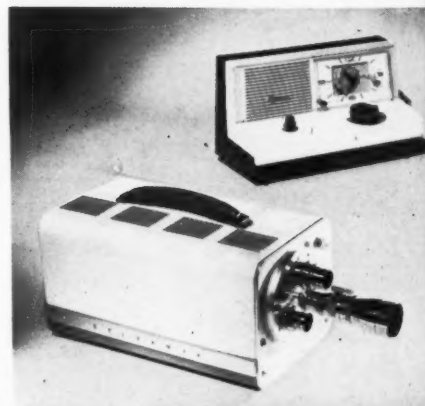
com-
e tops,
color,
Four
colors, pink, yellow, turquoise, and red, have been styled for rectangular, round, and drop-leaf tables with matching chairs. They also come in a new "copper" finish.



GANTRY-TYPE controlled-atmosphere hardening furnace, with atmosphere quench for hardening rocket motor cases and aircraft components, went into operation recently at Lindberg Steel Treating Company's Melrose Park, Ill. plant. Large enough to handle the rocket motor case of the Minuteman intercontinental ballistic missile, it is electrically heated, has five control zones, and operates between 250° F. and 2,050° F. The furnace rolls on wheels along tracks that straddle a large pit, and is bottom loading and bottom quenching. The pit is nineteen feet wide, twenty-eight feet deep, and fifty-five feet long. Furnace is lined with Armstrong A-25 insulating fire brick, which has a maximum hot face temperature of 2,500° F.



THE SYLVANIA CAMERA, heart of the closed-circuit television system, is shown here in comparison with a clock radio. The camera, a vidicon-type, weighs only fifteen pounds. It requires no special lighting, and will transmit an image on channels two through six to any standard, home-type receiver.

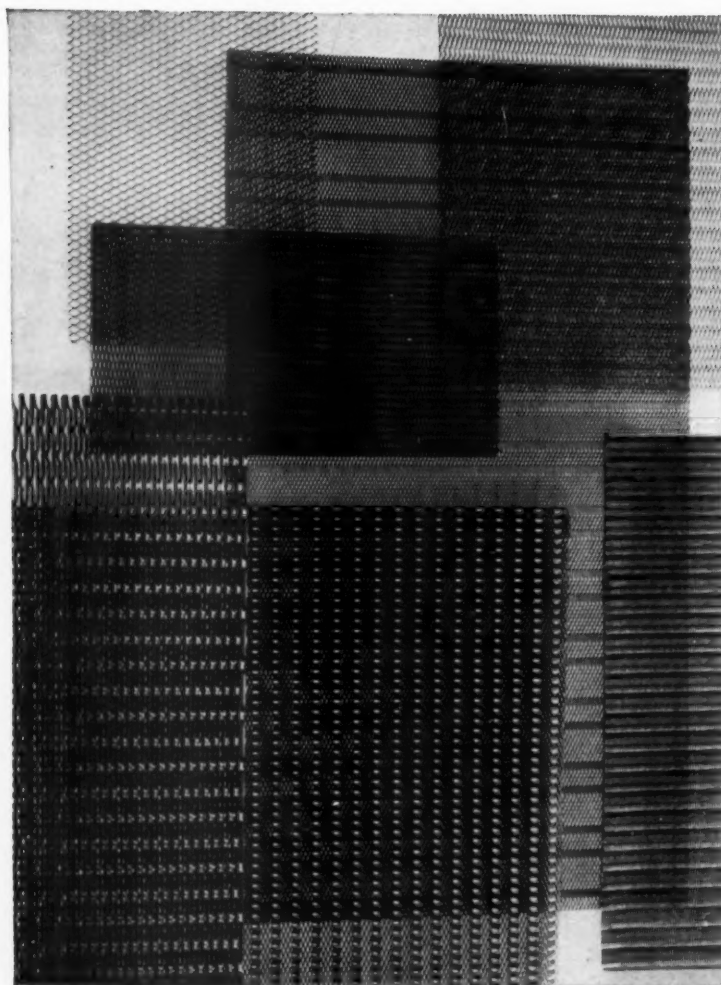
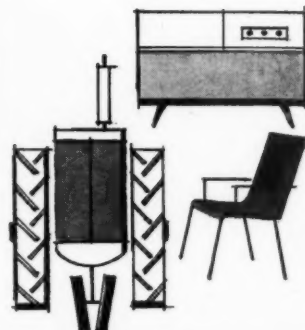


ROPER "STAGGERED" DROP-IN burner arrangement on this new gas cooking unit provides handy, safe "landing space" for hot utensils. Burner controls are centered at front of cooking top. Decorative bezel protects controls, and lifts out for easy cleaning.



*Inland "job-tailored"
Cold Rolled Sheets work better*

product: EXPANDED
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problem:

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solution:

the problem presented was overcome by "job-tailored" Inland Drawing Quality Aluminum-Killed Steel. The steel not only took punishment of severe expansion and pattern formation, but provided an excellent surface for all subsequent finishing operations.

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Sheets*

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For complete selection guide please turn page . . .

SELECTION GUIDE

HOT...COLD...SPRAY...DIP
CAUSTIC...SOLVENT...CRESOL

whatever your stripper requirements... **DIVERSEY** has the answer

Modern industrial practice presents many opportunities for substantial savings through the use of the *right* paint stripper. Repainting of rejects that did not meet finishing standards; removal of over-spray from paint racks and other equipment; removal of old finishes to modernize or renovate old capital equipment . . . these are typical of the hundreds of industrial applications requiring a safe, fast and economical paint stripper.

Obviously the requirements for stripping operations vary widely. The vast multiplicity of modern finishes and primers . . . plus the wide selection of metals to which they can be applied . . . give rise to an extremely large number of possible combinations. In addition, the size and weight of the objects from which paint is to be removed make for further complications.

Diversey, therefore, offers a complete selection of six different paint strippers to provide the greatest possible flexibility. This chart will help you to evaluate the one which will supply the most efficient and economical answer to your particular requirements.

For complete information on any DIVER-STRIP paint stripper, see Diversey Technical Bulletins.

NAME AND GENERAL DESCRIPTION
BOND RELEASE OR SOLVENT TYPES
<ul style="list-style-type: none"> • DIVERSTRIP S-90. The fastest, most efficient "bond release" type stripper, for use in dip or soak applications. Wrinkles film and loosens bond between paint and metal, causing paint to peel off and not go into solution.
<ul style="list-style-type: none"> • DIVERSTRIP S-70. Economical "bond release" type stripper designed to provide maximum efficiency at minimum cost, in dip or soak applications. Action similar to S-90 above.
<ul style="list-style-type: none"> • DIVERSTRIP T-100. The fastest, most efficient "bond release" type stripper for use in spray or brush applications. Has high viscosity for maximum efficiency on vertical surfaces. Does not dissolve paint but loosens bond, so it can be flushed off.
<ul style="list-style-type: none"> • DIVERSTRIP T-80. Economical "bond release" stripper for use in spray or brush applications. Action similar to T-100 above. Provides maximum economy in majority of applications.
ALKALINE SOAK TYPE
<p>DIVERSTRIP G-20. A new highly efficient and economical soak type stripper for use at elevated temperature. Dissolves paint film, also emulsifies or saponifies vehicle. Provides greatest economy.</p> <p>Pat. No. 2584017</p>
ORGANIC SOAK TYPE
<p>DIVERSTRIP O-50. A new fast acting cresol base stripper designed particularly for soak applications on zinc or magnesium . . . usually rapid stripping characteristics make it also advantageous on other metals. Quickly dissolves paint coating leaving a paint free surface.</p> <p>*PATS. PEND.</p>

TO DIVERSEY PAINT STRIPPERS

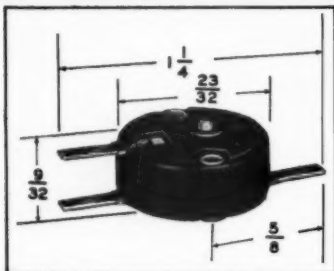
METHOD of APPLICATION and APPLICATION TEMPERATURE	USE ON THESE FINISHES	USE ON THESE METALS	REMARKS
S-90 and S-70. Used in dip or soak applications at normal room temperature. Provide adequate ventilation. Solutions are used undiluted.	Epons, Alkyds, Acrylics, Silicones, Nitrocellulose, Butadiene Copolymers, Chlorinated Rubber, Drying Oil, Phenolics, Vinyls, Chromates and other modern finishes and primers.	Steel, cast iron, copper, brass and aluminum and any of their alloys. Can be used on zinc or magnesium and their alloys under most conditions.	Features high speed on difficult stripping operations. Rinses easily and completely from treated surface. Controlled evaporation provides longer solution life for greater economy. Packaged with net volumes of 5 gal. or 53 gal. non-returnable steel drums. Has no flash point . . . provides maximum safety.
			Rinses easily and completely from treated surface. Controlled evaporation provides longer solution life for greater economy. Has flash point of 118°F. (Tag open cup). Packaged with net volumes of 5 gal. or 53 gal. non-returnable steel drums.
			Features high speed on difficult stripping operations. Has good flushing properties. Has no flash point . . . provides maximum safety. Rinses quickly and completely from treated surfaces. Packaged with net volume of 5 gal. or 53 gal. non-returnable steel drums.
Should be used undiluted at normal room temperature by either spray or brush application. Provide adequate ventilation.	Alkyds, Acrylic, Epons, Silicone, Phenolics, Ureas, Vinyls, Chlorinated Rubber, Nitrocellulose, Chromates and other modern finishes and primers.	Steel, cast iron, copper, brass and aluminum and any of their alloys. Can be used on zinc or magnesium and their alloys under most conditions.	Has good flushing properties. Specially formulated to rinse quickly and completely from treated surfaces. Has flash point of 118°F. (Tag open cup). Packaged with net volumes of 5 gal. or 53 gal. non-returnable steel drums.
Used in solutions, prepared by adding from 10 to 26 ounces per gallon of water. May be used at temperatures of 180°F. to boiling.	Alkyds, Butadiene Copolymers, Cellulose, Chlorinated Rubber, Drying Oils, Epons, Nitrocellulose, Phenolics, Urea . . . other modern primers and paints.	Steel, cast iron, copper, brass, magnesium and their alloys. Should not be used on zinc or aluminum and their alloys, unless etched surface is acceptable.	Has reserve stripping power for long solution life. Excellent for cleaning paint spray booth equipment. May be used in circulating water for paint screens, or applied in same manner as paint. Packaged in 425 lb. non-returnable steel drum.
Use in soak applications, diluted with 15% water by volume. Usually satisfactory at normal room temperatures. Faster stripping action obtained at elevated temperatures. Can be used at temperatures near boiling. Provide adequate ventilation. Personnel should wear rubberized canvas gloves, aprons, boots and goggles.	Acrylic Lacquers, Alkyds, Butadiene Copolymers, Chlorinated Rubber, Epons, Nitrocellulose, Phenolics, Silicones, Ureas, Vinyls and many other modern primers and finishes.	All metals except aluminum and its alloys. Particularly effective on zinc and magnesium and their alloys. May be used for stripping paint coatings from zinc plated surfaces without danger of removing the zinc.	Freezes at 38°F. Must be stored above this temperature. Is a non-flammable liquid. Packaged in 30 gal. non-returnable steel drums.

For complete information please write to Metal Industries Department, The Diversy Corporation, 1820 Roscoe Street, Chicago 13, Illinois.

DIVERSEY®



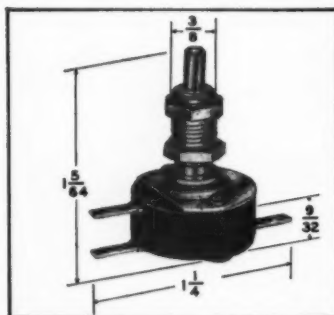
NOW...ACRO ADDS A SUBMINIATURE SWITCH TO THE BASIC AND PUSH-BUTTON APPLIANCE SWITCHES!



Model "Q" switch (Catalog number QD2000) is shown

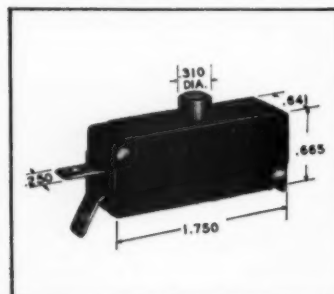
Acro's Dime Sized Model "Q" gives a Dollar's Worth of Performance

Here's a real space saver that carries a man-sized load. Acro's Model "Q" switch actually carries a 10 amp load, and has a long mechanical life—in excess of 10 million actuations! It is shock-resistant and operates under light operating pressure. This is a true Acro quality precision snap-acting switch. Solder terminals available at no extra cost. Underwriters Laboratory approved for 125 or 250 V.A.C.



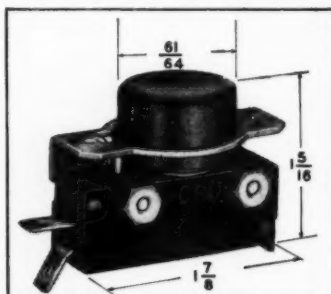
Model "Q" Switch. (Catalog number QD 2000). This is the same basic switch as the "QD" 2000 and is designed for panel mounting. .125 of built-in overtravel. Available in either 3/8" or 1/4" thread sizes. Solder terminals available at no extra cost. Also U. L. approved, for 125 or 250 V.A.C.

ACRO'S APPLIANCE SWITCHES FEATURE LONG MECHANICAL LIFE



Basic Appliance Switch (Catalog Number 276-0001-00). These models are ideally suited for appliances and vending machines. They have quick disconnect terminals to cut assembly time. They're available with pin plunger, overtravel and panel mount plunger; leaf and roller leaf actuators. U.L. approved for 15 amperes, 125-250 V.A.C., 1/2 H.P., 125 V.A.C., 1 H.P., 250 V.A.C.

We are now producing appliance switches for the leading vending machine and appliance manufacturers. Just send in your specific problem, and we'll put our engineers to work on it. No obligation of course.



Push Button Appliance Switch (Catalog number 276-0701-00). Designed for panel mounting, actuator frame pre-tapped for easy mounting. Red pushbutton is standard. Buttons may also be hot-stamped with letters or words of your own selection. U.L. approved for 15 amperes, 125-250 V.A.C., 1/2 H.P.; 125 V.A.C., 1 H.P., 250 V.A.C.



"OUR 20th YEAR"

ACRO DIVISION
Robertshaw

COLUMBUS 16, OHIO



ARI (Mr. Lytton continues)

→ from Page 38

is assurance of proper operation in all sections of the country.

Question: How does the certification program function?

The program is a contractual agreement between the manufacturer and ARI, giving the Institute the privilege of testing on a random basis. ARI will also conduct tests in response to individual complaints.

Electrical Testing Laboratories, of New York City, is the official testing referee.

The ARI Directory lists all units of all manufacturers in compliance. This information is distributed to *anyone* who is interested, including Better Business Bureaus.

All certified equipment bears the blue and white seal of approval, and the setup for policing assures maintenance of the program as established.

Question: Currently, what is the degree of compliance and acceptance?

Practically all of the major manufacturers are now participating, 46 in number. It is estimated that these manufacturers represent 90 per cent of the total unitary production in the air-conditioning industry. As a result of manufacturer cooperation, dealers and distributors are particularly enthusiastic.

The certification program has come further and faster during the last year than was dreamed possible. This is a tribute to the staff of ARI and to the members of the committee in the section.

AN MPM INTERVIEW WITH

George S. Jones, Jr.

MANAGING DIRECTOR

Question: In general terms, what is the business picture in the air-conditioning and refrigeration industry?

Taking the period from the fall of 1958 on a cumulative basis, there has been a 20 to 25 per cent increase in business in the unitary area (complete, self-contained units). However, all products in the industry are showing an increase this year. This ranges from the small, room air-conditioner to field designed and erected systems.

Question: Will you give us a brief picture of the industry potential?


The biggest potential, of course, is in residential, but there remains a very important potential in small shops and establishments which are too large for

to Page 62 (Col. 3) →



*Your
steel service
center's
Inventories
look
like
this*

Photos courtesy of The Universal Steel Company



*... so
your
inventories
can look like this!*

To cut inventory costs, make your Youngstown Warehouser your local "steel service center". Make full use of his complete local stocks, fast delivery service. His one-source service simplifies your purchasing and bookkeeping, too. You'll find him an efficient, time-saving, partner-in-production.



THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Youngstown, Ohio

Manufacturers of Carbon, Alloy and Yaloy Steel



Castings by ACME ALUMINUM FOUNDRY CO., Chicago

... here's your **ANSWER!**



Even the finest organic or ceramic coatings are not satisfactory unless the base metal is **CHEMICALLY CLEAN**. MACCO No. 19 is a brilliant, new, streamlined 1957 chemical development, *ideal for use in either spray type washer or tank*. This highly efficient cleaner will thoroughly **CLEAN** and **BRIGHTEN** aluminum and die cast metal **WITHOUT ATTACK**. *Just One Operation—No Smut—No Acid Dip.*

simple . . . economical . . . sure

Manufacturers of Better Metal-Working Compounds since 1931
 9210 SOUTH SANGAMON STREET • CHICAGO 20, ILLINOIS



Automatic paint line

→ from Page 35

enroute by a five-hp fan. Each of the oven's two zones has its own burner and firebox. One overall oven enclosure houses both zones, an insulated portion separating the two. The partition has an opening through which second-coat parts pass from the 200° F. zone to the 345° F. zone. The oven is gas-fired and of the direct heating type.

Air make-up system affords positive pressure

The air make-up system is also located on the roof to conserve floor space, and comprises two banks of steam coils which heat incoming air during the winter, a continuous filter media which separate dusts from the incoming air stream, and a fan which ducts the air to the paint finishing room. This system admits the same amount of air exhausted by paint-spray exhaust fans, plus an additional 15 per cent to maintain the paint finishing area under positive pressure.

Single-panel control system

Motor controls and recorder-controller instruments are located on one large panel outside the paint finishing room. By centralizing all controls in one area, the entire system may be controlled from one location. Placement of the control panel outside the finishing room also enables use of non-explosion-proof electrical apparatus.

Oven and make-up air temperatures are controlled by means of gas expansion bulbs located in each zone of the oven and just downstream of the air make-up fan, respectively. As oven temperatures fluctuate, the oven bulbs activate controls which regulate the supply of fuel to the burners. As make-up air temperatures vary, steam to the steam coils is regulated to maintain temperatures within preset limits. Records are kept of oven and make-up temperatures as trouble-shooting aids.

Paint storage and mixing

Paint is stored in drums on racks provided in a paint storage room. This room connects by a fire-door with the paint mixing room containing six paint mixing and circulation tanks. These tanks are used in pairs, one for mixing and the other for circulation. Valving is such that either tank may be used for either function. One pair of tanks is used for the prime coat, a second pair for the first vinyl coat, and the third pair for the second vinyl coat. They are connected with their respective spray booths by recirculating piping

New way to muffle

refrigerator compressor

unique method of agitating oil and creating bubbles tends
to deaden sound generated by spring-mounted compressor

A NEW METHOD of reducing and controlling the noise level of refrigerator compressors has been developed by Westinghouse Electric Corp., Columbus, Ohio.

The method is based on the physical principle that an aerating liquid muffles sound. By bubbling the oil in the new Westinghouse internally spring-mounted compressor, engineers have appreciably deadened the sound of compressor operation. The new compressors are being used on the 1959 line of Westinghouse refrigerators.

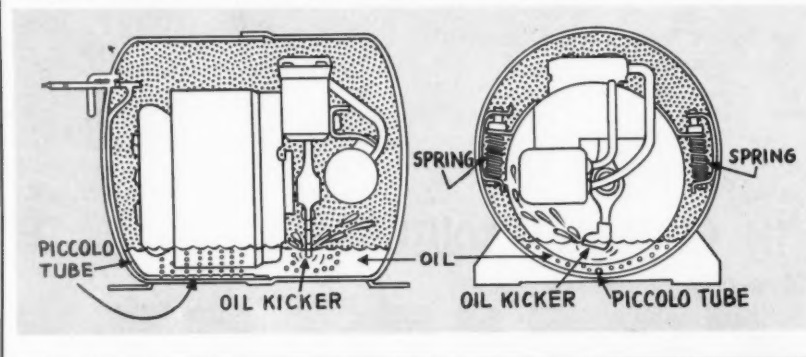
A. J. Pfeiffer, manager of the refrigerator-freezer engineering department, said a patent application is pending on the new technique. "To refrigerate, we compress Freon 12 into a cold liquid and when the cold has been removed, it expands into a gas and re-

turns to the compressor in a gaseous state," Pfeiffer explained. "Instead of returning the gas directly to the chamber adjacent to the compressor, we pass some of it through oil surrounding the compressor to create sound deadening."

"We have augmented this aerating with another device. We have immersed one end of an agitator in the oil and fastened the other to the drive shaft of the piston so that whenever the piston is operating, the agitator disturbs the oil and creates additional bubbles."

Internally spring-mounted compressors have had growing acceptance in the refrigerator and air conditioning industry in recent years. However, the noise in this design has continued to be a problem. This new feature of this design further abates the problematical noise level.


A new method of reducing and controlling refrigerator compressor noise levels — based on the principle that aerating liquid muffles sound — has been applied to new compressors by Westinghouse. Oil in the internally spring-mounted compressor is bubbled by refrigerant returning to the compressor and by a mechanical oil kicker. The bubbling oil, Westinghouse engineers say, appreciably deadens the sound of the compressor operation. In the drawing, components of the compressor not actually essential to the deadening effect have been eliminated.



systems. Tanks contain 120 gallons each, and are equipped with air-operated agitators and pumps. The tanks are presently used with the color that is most frequently specified and regarded as standard, blue-gray.

IBM customers have the unusual prerogative of selecting the color of their machines, and have a choice of five grays, two blues, a tan, flame red, lemon yellow, and charcoal brown. The

paint mixing room has been designed so that should other colors be used in sufficient volume in the future, additional tanks can be located above the present ones to permit handling of additional colors. At the present time, when other than the blue-gray is specified, "pressure-pots" located at the booths are used. Under the old system, all paint was applied from pressure pots and mixed at the booth.



Completeness at Southern Screw starts with the placing of your order and continues through the shipment of your screws on free disposable pallets. Whether your screws are supplied from Southern Screw's 1,500,000,000-piece stock or manufactured to your specifications, customers know that Southern Screw's completeness includes the consistent quality and service they have a right to expect.

Let Southern demonstrate what completeness means on your next fastener requirement.

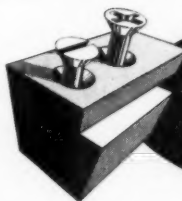
IN FASTENERS SOUTHERN IS

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Machine Screws & Nuts • Tapping Screws • Wood Screws • Stove Bolts • Carriage Bolts • Dowel Screws • Hanger Bolts • Drive Screws

Manufacturing and Main Stock in Statesville, North Carolina

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SCREW COMPANY
STATESVILLE • NORTH CAROLINA

NEW

INDUSTRIAL LITERATURE

Non-Staining Vinyl

A four-page booklet describes a non-staining finish for laminate vinyl sheeting. This vinyl sheeting can be laminated to steel, aluminum, and other metals. It is designed particularly for the appliance industry.

Although the finish was developed primarily for use with white vinyl, it is also available in other colors, multi-colored combinations, and textured effects. The manufacturer claims that all stains tested have proven removable. For further information, write Dept. MPM, Columbus Coated Fabrics Corp., 7th at Grant Aves., Columbus 16, Ohio.

Liquid Sealant

A thin liquid plastic that hardens when confined between closely-fitting metal parts is said to make possible easier tolerances and improved alignment. Case histories of its use by major appliance manufacturers are described in a brochure now available. The brochure also describes properties and methods of application, and includes selector charts and usage tables for calculation of costs.

The sealant is claimed to lock threaded parts more effectively, retain bearings, bushings, or hardened sleeves without press fits, and seal tubing joints and connections. No mixing or heat is required in application. For a copy of the brochure and a free sample of the product, write to Dept. MPM, American Sealants Co., 151 Woodbine St., Hartford 6, Conn.

Lock-Forming Machine

A line of rolling machines for sheet metal work is described in an illustrated, 24-page booklet. The machines are said to handle pieces of any length over seven inches without any manual adjustment for varying gauges. Two of the models are equipped with an adjusting dial which regulates the width of the pocket to correspond with the gauge of metal used. Model numbers indicate the maximum gauge of metal for which each machine is recommended. Write Dept. MPM, The Lockformer Co., 4615 W. Roosevelt Rd., Chicago 50, Ill.

Nongearred Motors

An eight-page catalog describes four types of ac shaded pole, reversible, nongearred motors. Information is given on performance characteristics, ratings, construction, dimensions, and typical applications. A special section shows electronic control of a reversible motor. For the catalog, write Dept. MPM, Barber-Colman Co., Rockford, Ill.

Grinding Wheel Safety "Do's & Dont's" Chart

Ten "Do's" and ten "Don'ts" of grinding wheel safety are listed brightly on a red, white, and black 12" x 12" wall chart.

Terse copy, easy to read and easy to remember, the chart is designed for hanging in tool rooms, tool cribs, bulletin boards and on or near grinding machines.

We will procure your free copy from the source if you will write on your company letterhead to Special Projects Editor, MPM, York St. at Park Ave., Elmhurst, Ill.

Aluminum Finishing

An aluminum finishing manual describes such operations as cleaning, deburring, etching, welding, and deoxidizing. Problems concerning these operations as well as methods and materials for solving them are included in the manual. Copies can be obtained by writing Dept. MPM, Frederick Gumm Chemical Co., Inc., 538 Forest St., Kearny, N.J.

Ceramics Chart

Copies of Chart 591, which shows properties of the most frequently used technical ceramics, are now available. Measurements shown are average values from test pieces. According to the manufacturer, special purpose compositions are also available for unusual requirements. For free copies of the chart, write Dept. MPM, American Lava Corp., Manufacturers Road, Chattanooga 5, Tenn.

Low-Temperature Cleaning

Low-temperature metal cleaning is said to result in reduced cost with the use of this manufacturer's cleaning compound, as described in a 4-page folder. The compound is designed primarily for use in spray washing machines, and is most frequently used at a temperature range of 80 to 100° F.

Advantages claimed for the product include long life in solution, ability to retard rusting of steel between operations, and safety on metals. Copies of the folder are available from Dept. MPM, Oakite Products, Inc., 117 Rector St., New York 6, N.Y.

Electrical Connectors

A fully-illustrated catalog shows a complete line of electrical connectors for industry. It lists electrical current ratings for cable, as based on wire gauges and number of wires. The line includes such connector styles as push-pull, round push-latch, quick-loc, straight pin bigun, round push-lock, and changeout. A copy of this catalog is available upon request to Dept. MPM, Electrical Products Div., Joy Mfg. Co., 1241 Macklind Ave., St. Louis 10, Mo.

Circuit Breaker Bulletin

A circuit breaker designed to eliminate the use of several springs and adjusting pins which are prone to disorder is described in a bulletin. With ratings at intervals from 5 to 25 amps, it is said to be used primarily for remote, overcurrent protection of 110-volt ac motors through one-half hp. In appliance applications, this circuit breaker is used in automatic clothes washer controls for remotely-mounted overcurrent protection. Write Dept. MPM, Metals & Controls Corp., Spencer Div., Attleboro, Mass.

Fan and Limit Controls

Fan and limit controls are described in a booklet entitled "The Most Complete Line." Included in the booklet is a short explanation of the features and outlines of the action, operation, and mounting of each series. Copies can be obtained by writing for form #R-1630, Dept. MPM, White-Rodgers Co., 1209 Cass Ave., St. Louis 6, Mo.

Nylon-Insulated Connectors

Literature describing nylon-insulated solderless connectors for pigtail splicing of two or more wires is now available. To form the pigtail units, wires are inserted, then crimped in a single oper-

airless * Spray Coating

***SPRAY PAINTING WITHOUT AIR**

Schramm Inc., West Chester, Pennsylvania, manufacturers of world renowned portable and stationary air compressors has eliminated the need for huge spray booths through the utilization of Nordson Airless Spray Coating equipment. By eliminating Air as an atomizing agent, Airless by Nordson minimizes "overspray" problems. This advantage can provide the user with these other cost cutting advantages:

- Paint savings as high as 50%
- Lower exhaust requirements
- Better protected and appearing product
- As high as 80% labor savings
- Decreased health and fire hazards

Airless, the modern method of spray painting, is now being used throughout the world for the application of all types of coating materials to many various types of products.



NORDSON CORPORATION

AMHERST, OHIO

YUKON 8-4473

In Canada: 864 Pape Ave., Toronto, Ontario

write for airless spray painting brochure

THE BEST IN
SPRAY COATING
EQUIPMENT

ation. The splice is then permanently anchored and insulated.

According to the maker, the connectors have a wide variety of uses in general industrial wiring as well as in the appliance, automotive and power-tool fields. Write Dept. MPM, Electrix Terminals & Connectors, Inc., 990 E. 67th St., Cleveland 3, Ohio.

Metal Stampings Brochure

A 16-page brochure which describes facilities for producing deep drawn parts and metal stampings to customer specifications is now offered. In addition to explaining manufacturing processes, the brochure illustrates production equipment at work and representative parts. Types of press equipment and their capacities are presented in a chart. Frequently-used ferrous and non-ferrous metals are also listed. For further information, contact Dept. MPM, Peterson Products Corp., 4840 River Rd., Schiller Park, Ill.

Cutting Tools Booklet

A 64-page pocket booklet, designed to help machine operators, tool layout and tool maintenance men in the selection, application, and maintenance of cemented carbide cutting tools, has been reprinted. The booklet includes sections dealing with tool and grade selection, machining hints, and keeping tool performance records. To get the booklet, write Dept. MPM, Kennametal, Inc., Latrobe, Pa.

Mechanical Press Brakes

Mechanical press brakes are featured in an eight-page bulletin that gives complete specifications of the 40 standard sizes in a new series of heavy-duty models. Capacities in the series range from 90 to 500 tons. Optional features are available. Contact Dept. MPM, Dreis & Krump Mfg. Co., 7400 S. Loomis Blvd., Chicago 36, Ill.

Barrel Finishing System

A four-page brochure describes a recently-introduced deburring and finishing system called "roll barrels." The machines use an open system of parallel rubber-covered rollers powered by a variable speed electric motor. Small barrels with flanges are placed on, and rotated by, the powered rubber rollers. The barrel speeds range from 17 to 65 rpm.

Nine barrel sizes are available in single or double row units, depending upon floor space requirements. Write Dept. MPM, Queen Products Div., King-Seeley Corp., Albert Lea, Minn.

Fusion Coatings

A four-page illustrated booklet on powdered resins and equipment for fusion coatings is now available. Compounded to uniformly-small particle size, the plastic powders are said to be practical for a wide variety of coating applications. Processes in which they are used include flocing, flame spraying, and fluidized-bed coating. To obtain this booklet, write Dept. MPM, Michigan Chrome & Chemical Co., 3615 Grinnell Ave., Detroit 13, Michigan.

Chemical Analyzer Bulletin

Automatic determinations of water hardness, pH, residual chlorine, phosphate, hydrazine, and dissolved iron concentration by a chemical analyzer are described in a bulletin showing the operation, application, and design specifications of this instrument.

Working by hydraulic displacement, the analyzer has but one moving part and requires no electric or pneumatic power for operation. For a free copy of the bulletin, contact Dept. MPM, Milton Roy Co., 1300 E. Mermaid Lane, Philadelphia 18, Pa.

Printed Circuits Booklet

A 14-page booklet discusses the relationship between various factors affecting both cost and reliability in printed circuits. It points out that the proper printed circuit design may reduce cost and, at the same time, increase reliability. Called "Reliability and Cost in Printed Circuits," the booklet is available free of charge by writing Dept. MPM, Arthur Ansley Mfg. Co., New Hope, Pa.

Midget Lampholders

A data-sheet describing a "super-miniature" lampholder has been issued. The manufacturer claims that the lampholder can be used for instrument dial and transistor radio scale lighting and other uses. An extra-small bulb only 9/16" in height is used. To obtain the data sheet, contact Dept. MPM, Drake Mfg. Co., 1711 W. Hubbard St., Chicago 22, Ill.

Materials Handling Magazine

Free copies of the latest issue of the "Lever," a 16-page magazine describing new developments and uses of 24-volt narrow aisle equipment for materials handling problems, are now available. Write Dept. MPM, Lewis-Shepard Products, Inc., 125 Walnut St., Watertown, Mass.

Hydraulic Press Film

A 16 mm sound-color film on cost reduction and flexibility in industrial production through the use of hydraulic presses is now available. Entitled "The Multi-Viewpoint," the film is a documentary on how tooling and production men simplify production operations with modern multipresses. A variety of industrial applications are shown on both automatic and semi-automatic operations. For the 25 minute film, write Dept. MPM, Denison Engineering Div., American Brake Shoe Co., 1160 Dublin Rd., Columbus 16, Ohio.

Double Crank Presses

A color bulletin covering the Warco line of straight side, double crank presses illustrates and describes the line in capacities from 60 to 400 tons inclusive. To obtain the bulletin, write Dept. MPM, Federal Machine and Welder Co., 1745 Overland Ave., N.E., Warren, Ohio.

Plastic Nameplates

Plastic nameplates which are available in metallic finishes are described in a four-page folder now available. According to the manufacturer, low cost and quick assembly are two of the advantages of the product. It is claimed the nameplates may be attached to screens or curved surfaces in addition to its other uses. For the folder, write Dept. MPM, V. H. Swenson Co., Inc., 554 Elm St., Kearney, N.J.

Mercury Switches

Catalog 90b describes a standard line of mercury switches. It includes illustrations, dimensions, electrical ratings, drawings, application information, and technical data for ac or dc use. According to the manufacturer, the switches are hermetically sealed, versatile, have a low operating force, are resistant to oil and water, and give quiet, trouble-free operation. Write Dept. MPM, Micro Switch Div., Minneapolis-Honeywell Regulator Co., Freeport, Ill.

Punching & Notching Machine

A box-type frame is featured in a punching and notching machine described in a 12-page illustrated catalog. According to the manufacturer, the use of this type of frame results in extremely low deflection, longer die life, and less wear on die pins. A large bed area accommodates a number of die sets in one machine.

The machine is available in 200 or 300 ton capacities, front to back sizes

of 36 inches to 60 inches, and 96 to 240-inch lengths. To obtain the catalog, write Dept. MPM, The Taylor-Winfield Corp., 1052 Mahoning Ave., N.W., Warren, Ohio.

Magnetic Catches

An idea file is offered which features magnetic catches for metal products and other hardware items. Thousands of stock hardware designs are said to be available to meet individual requirements. Write Dept. MP 96, Amerock Corp., Rockford, Ill.

Blower Housings

A pamphlet and prints featuring variations for blower housings are now available. The manufacturer claims the advantages of low unit cost, complete assemblies or parts, and broad range for wheels 3 1/4" to 9 5/16" in diameter. For the literature and prints, write to Dept. MPM, Detroit Stamping Co., 404 Midland Ave., Detroit 3, Mich.

Perforated Materials

General Catalog No. 75 describes a variety of patterns available for decorative or functional use of perforated steel sheets and other materials. They can be had in coils, sheets, or plates up to one inch thick. The patterns are available from existing dies or can be made to order. To obtain the catalog and a stock list of perforated steel sheets, write Dept. MPM, Harrington & King Perforating Co., 5640 Fillmore St., Chicago 44, Illinois.

Finishing Systems

Production layouts and engineering for a new finishing system or units of finishing or processing equipment are described in Catalog A-659. This finishing equipment manufacturer claims quality construction, functional dependability, positive control, and maximum safety. Write Dept. MPM, R. C. Mahon Co., 6565 E. Eight Mile Rd., Detroit 34, Mich.

Epoxy Stripper

Bulletin F-7893 describes a powerful stripper which is said to strip metals clean of single or multiple coats of epoxy in a matter of minutes. Called "Stripper S-A," it is claimed to be safe for all metals except zinc and magnesium, and safe to the user, since it works cold. The stripper has no flash point and rinses with water. For the bulletin, which describes other finish-removers as well, write Dept. MPM, Oakite Products, Inc., 17 Rector St., New York 6, N.Y.

Booklet On Perforated Metals

A booklet entitled "Perforated Metals For Every Purpose" is offered by a specialist in perforated metal design and production. The designer offers 89 years of experience on both large and small jobs. To obtain the booklet, write to Dept. MPM, Charles Mundt & Sons, 55 Fairmont Ave., Jersey City 4, N.J.

"Special" Tooling Booklet

Tooling units for special uses are described in an illustrated booklet which is offered free upon request. It is claimed that these "specials" have eliminated certain operations and performed work believed beyond the scope of this type of tooling. Cost reduction is also claimed when the "specials" are used in conjunction with standard tooling equipment. For the booklet, write Dept. MPM, Tool Products Corp., 377 Old Falls Blvd., North Tonawanda, N.Y.

Abrasive Disc Price List

A four-page illustrated price list on abrasive discs is now available. The discs are used for standard, general industrial, sheet metal, soft or semi-soft metals, ceramics, and special applications. It is said that they have greater particle density, more cutting edges, and longer life than conventional discs. Write Dept. MPM, Abrasive Co. of America, Fort Lee, N. J.

The Grinding Wheel

A revised and updated edition of the book "The Grinding Wheel" discusses grinding wheels, grinding machines, and grinding operations from a basic, as well as a practical, working standpoint. Based on a 1951 edition, the 532-page book is now expanded with added information. It is available for \$4.95 from Dept. MPM, Grinding Wheel Institute, 2130 Keith Bldg., Cleveland 15, Ohio.

"Turnkey" Data File

A data file covering a line of process engineered equipment and systems for metal finishing has been issued. The file describes the "turnkey" plan for specialized finishing service offered. This plan makes available to manufacturers one-source engineering, installation, and service for complete finishing systems on a "turnkey" basis. For the data file, as well as a new price guide, write Dept. MPM, Allied Research Products, Inc., 4004 E. Monument St., Baltimore 5, Md.

ARI (Mr. Jones continues)

→ from Page 54

the practical use of room air-conditioning equipment. There will be a continuing important potential for the large, engineered units for hotels, office buildings, government buildings, etc. Air-conditioning has become a requirement for new buildings, both from the standpoints of competing for rentals, and competing for employees. While it is, of course, much easier to install air-conditioning in the new buildings, older structures must be modernized to meet keen competition on these two fronts.

Question: In what section of the industry is the fastest development apparent?

The fastest development is in the field of the split system (with condensing units outside).

Question: What is being done about the "noise" concerning which we hear objections in the residential field?

ARI has an active committee on noise and all of the various product sections are represented. This committee hopes to accomplish three things as quickly as possible: (1) Bring the buyer to realize that there is no acceptable method for measuring noise. (2) Avoid the establishment of a "standard" based on decibel level alone (other factors such as pitch, tone, and quality must be considered). To date there is no acceptable method for measuring "quality." (3) Develop a practical method of measuring the "quality" of sound.

Question: What products are included in the term "unitary" as used by ARI?

The term includes refrigeration system plus the fuel fired furnace, the heat pump (electrical), and absorption-type units (gas).

Question: Passing up air-conditioning for the moment, where does preservation of food fit into the industry picture?

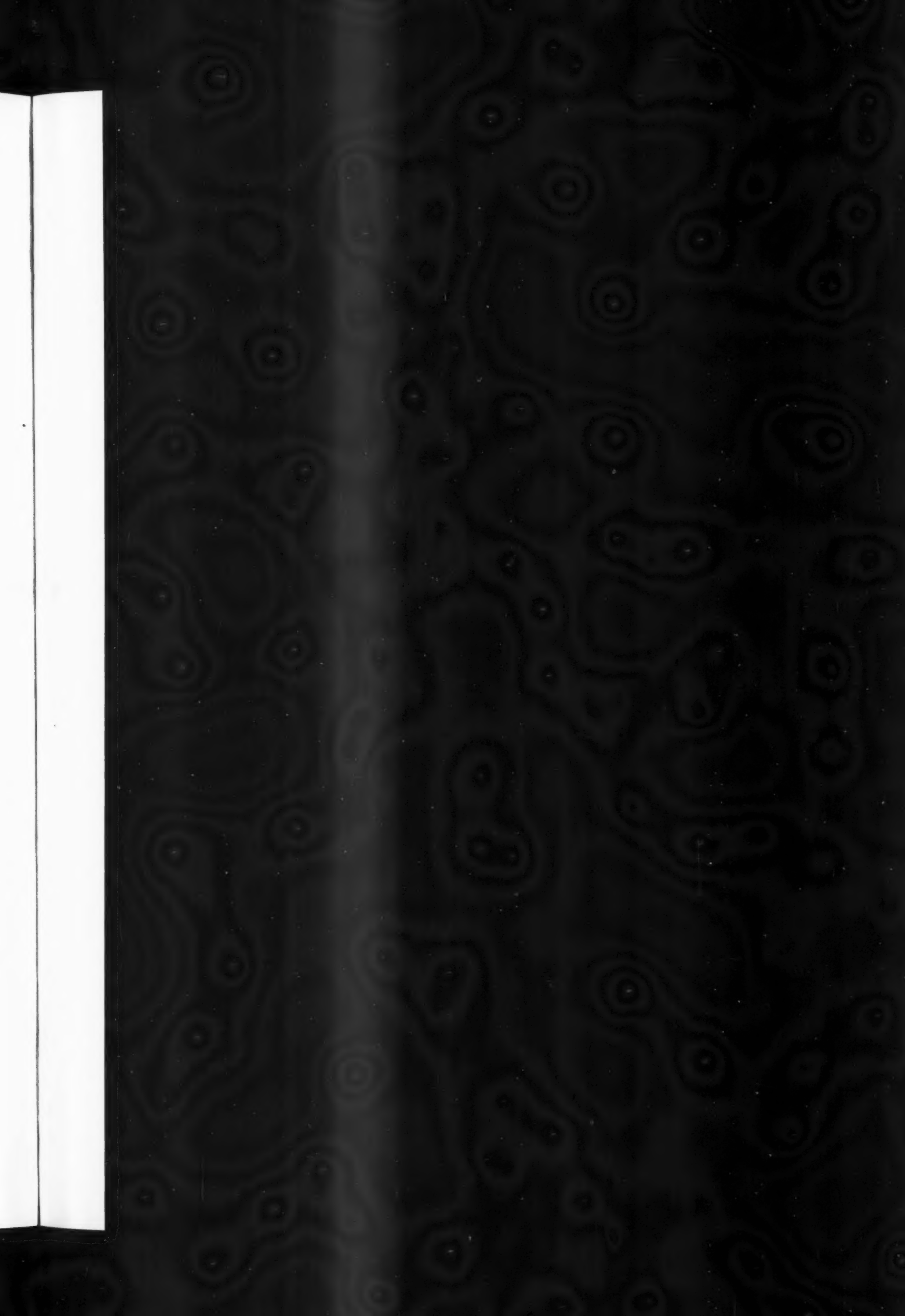
Preservation of food is the number one use for the refrigeration cycle. Without it, our table foods would, of necessity, be completely revolutionized.

The requirement for refrigeration includes fast freezing, warehousing, transportation, and retail stores and sales outlets. Other uses that are becoming increasingly important are refrigeration of antibiotics and drugs, for precision manufacturing, and the space age program.

It becomes obvious that as our population expands, refrigeration requirements for all these applications will continue to increase.

In my opinion, the public owes a

to Page 98 →





THE ONES THAT WILL LAST (and last, and last!)? THOSE MADE OF WEIRKOTE® ZINC-COATED STEEL!

Laboratory salt-spray tests prove it. Leading manufacturers prove it. Experience proves it. Primary window frames and storm and screen frames of Weirkote zinc-coated steel last and last and last—literally shrug off the elements!

Weirkote will not give in to corrosion invasion because its zinc coat clings tightly to its steel surface year after year. Reason? Zinc and steel are actually integrated by Weirkote's continuous process.

This extra protection pays off when it comes to fabricating Weirkote, too. You can crimp it, twist it, torture it—work it to the limits of the steel itself—without chipping or flaking its surface. And this pays off in your pocketbook: No more costly rejects, and coating after fabrication can be eliminated.

Whether you're talking profit or product, there's a lot to be said for Weirkote zinc-coated steel. Write today for a free booklet that tells all about it. Weirton Steel Company, Dept. R-14, Weirton, West Virginia.



**WEIRTON STEEL
COMPANY**

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION

NEW

SUPPLIES & EQUIPMENT

Marking & Numbering Machine

A combination marking and numbering machine has been introduced. Consisting of two separate units, it is designed to provide the marking of consecutive numbers and trade mark or code marking, and to provide controlled drive and measuring mechanism.

Characters are $\frac{1}{8}$ " and numbering head has to be re-set every 99,998 feet. Cable sizes of $\frac{1}{8}$ " to 3" in diameter are marked at speeds of about 300 feet per minute.

For further information, contact Dept. MPM, Acromark Co., 390 Morrell St., Elizabeth, N.J.

Circuit Breakers

A line of low amperage circuit breakers for special electrical machine and appliance applications has been introduced. Rated five through 20 amperes, the breakers are said to have application on almost all 120 volt electrical equipment and machinery. These include household appliances, portable generators, electronic apparatus, and business machines.

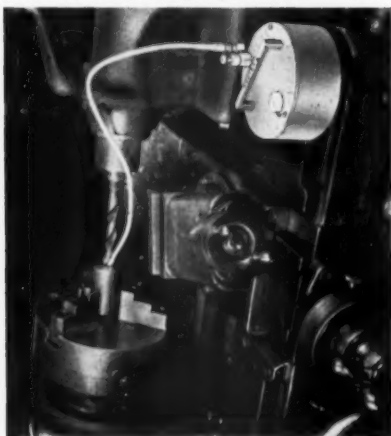
For further information, contact Dept. MPM, Federal Pacific Electric Co., 50 Paris St., Newark 1, N.J.

Contact Switches

Both mercury-to-metal and mercury-to-mercury contact switches stripped of their bakelite cases and either with or without leads can now be obtained. Sizes available range from $\frac{3}{16}$ " to $3\frac{1}{16}$ " long and $\frac{3}{16}$ " to $\frac{3}{4}$ " wide. For further information, contact Dept. MPM, Durakool, Inc., Elkhart, Ind.

Reservoir Lubricator

A reservoir pressure lubricator has been put on the market. The lubricator has a heavy cast iron base and an oil pump which controls the



amount and pressure of the cutting oil flow. The oil-tight metal hose is positioned to deliver the oil at the cutting edge of tools. It is claimed to be ideal for supplying oil to tools in drilling and tapping operations.

For further information, contact Dept. MPM, C-B Tool Co., Webank Rd., Lancaster, Pa.

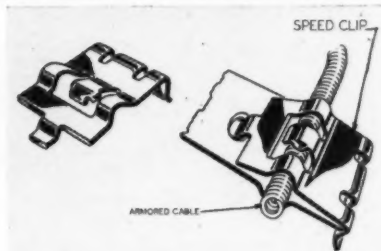
Fiberglass-Lined Tanks

Fiberglass-lined tanks in a variety of sizes and shapes for solution, plating, cleaning, and finishing have been developed. The tank liners are said to provide a high degree of electric and thermal insulation, protecting labor and providing more comfortable working conditions. They are claimed to be form-stable and unaffected by the usual caustic and acid solutions.

For further information, contact Dept. MPM, Myco Co., Belvidere, Ill.

One-Piece Speed Clip

A speed clip, designed to secure small-diameter armored control cables on electrical equipment, automobiles, and other products, has been



announced. The one-piece cable clip is said to offer positive, vibration-proof fastening at any location along the cable, and unlimited reuse without damage to cable or clip.

For further information, contact Dept. MPM, Tinnerman Products, Inc., Cleveland, Ohio.

Timer Switch Selects Correct Operating Cycle

A new timer switch, said to make selection of complex operating cycles easy in automatic appliances, has been developed. At the push of a button, the timer automatically sets up any of 24 different cycles suitable to various functions and fabrics in home laundries or driers.

Operating features include four-second programming, positive program selection which terminates at a mechanical stop to assure correct cycle selection, and positive drive through a reciprocating escapement that eliminates faulty programming.

For further information, contact Dept. MPM, Electronic Timers Corp., Div. of P. R. Mallory & Co. Inc., Warsaw, N.Y.

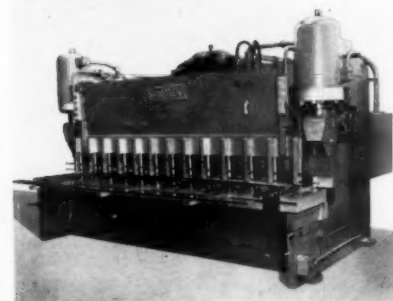
Non-Creeping Fiberglass Tape

A thermal curing, pressure-sensitive, impregnated, fiberglass tape for both mechanical and electrical applications has been developed. It is claimed that once the tape is cured, it will resist the tendency to creep under load. It has a temperature range of -100 degrees F. to 500 degrees F., and will adhere to any dry, clean surface.

The tape is produced by a process which eliminates the need for etching the backing. It is available in rolls 18 yards long and in widths of $\frac{1}{2}$ inch, $\frac{3}{4}$ inch, $1\frac{1}{2}$ inch, and 2 inch.

For further information, contact Dept. MPM, The Connecticut Hard Rubber Co., 407 East St., New Haven 9, Conn.

Hydraulic Shears



A complete line of hydraulic shears is now available. Capacities range from eight foot lengths of $\frac{3}{8}$ " mild steel, through 12 foot lengths of $1\frac{1}{2}$ " mild steel. In addition, special capacities are available.

All shears are equipped with automatic control to keep the ram operating at a predetermined shear angle. This angle is adjustable by a hand-wheel located at the operator's station.

For further information, contact Dept. MPM, Verson Allsteel Press Co., 9300 S. Kenwood Ave., Chicago 19, Ill.

Cleaning Cabinets

Versatility and adaptability are claimed for airless blast cleaning cabinets which are designed to meet the needs of users whose production rates outstrip the capacity of standard blast equipment, but are not sufficiently large enough to warrant installation of high production equipment. It is said that the cabinet requires less floor space, but will accomplish uniform cleaning on castings with deep pockets, cavities, and recessed holes. For further information, contact Dept. MPM, Wheelabrator Corp., 1143 S. Byrkit St., Mishawaka, Ind.

Dust Collector

A cabinet cloth filter-type dust collector, operating in the 650-1535 cfm range, is reported to have nearly 100 per cent dust filtering efficiency. The standard model contains a pull-out drawer

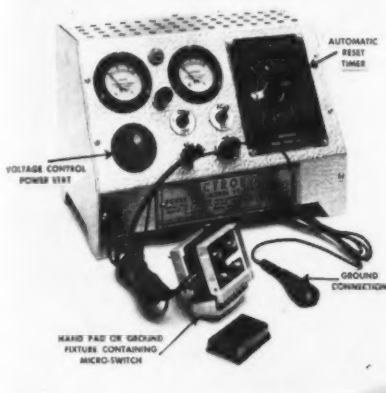


with 5.5 cubic feet capacity. Dust capacity is nine cubic feet. It is powered by a three horsepower, 3450 rpm, vertical motor. For further information, contact Dept. MPM, Torit Mfg. Co., Walnut and Exchange Sts., St. Paul, Minn.

New Products

Electrolytic Etching Unit

An electrolytic, stencil-etched mark .003 inch deep can be produced in 15 seconds by means of a new high-potential power unit. It operates from any 115 volt, 50-60 cycle ac



source, and is said to permit deep-etch marks of uniform high quality in about one-half the time previously required.

The unit supplies the etching current electrolytically through specially-prepared stencils. Legible marks for parts identification, trade marks, inspection code numbers, and similar indicia are reproduced permanently, according to the manufacturer.

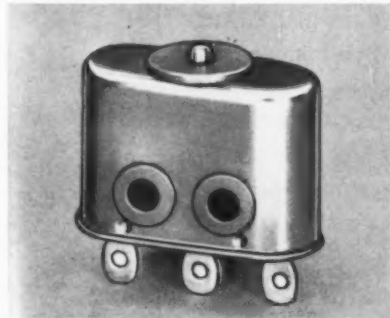
For further information, contact Dept. MPM, Electroetch Co., 14925 Elderwood Ave., East Cleveland 12, Ohio.

Small Appliance Controls

A precision-built, compact series of controls for smaller appliances has been introduced. The series includes a manually-operated control for use on console, bathroom, and vented and recessed wall heaters. This control also is available with a pressure tap. For further information, contact Dept. MPM, Grayson Controls Div., Robertshaw-Fulton Controls Co., 100 W. Victoria St., Long Beach 5, Calif.

Subminiature Switch

Probably the smallest snap-acting, high temperature switch available today, according to the manufacturer, this precision model uses special refractory materials in its construction and



has a temperature range of -65 degrees F. to 700 degrees F. throughout its life.

The switch has an operating force of 10-20 ounces, an electrical rating of 5 amps resistive and 3 amps inductive at 28 volts, dc, and a movement differential of .0005 inch to .005 inch. For further information, contact Dept. MPM, Haydon Switch, Inc., Waterbury 20, Conn.

Nylon Snap Bushing

A patented nylon snap bushing which locks under finger pressure is now being manufactured. It snaps into a $\frac{7}{8}$ " diameter chassis hole and cannot be removed unless the nylon step-clips are compressed.

It is claimed that no threaded holes or nuts are required to hold it in place, and is available with various inside diameters. For further information, contact Dept. MPM, Heyman Mfg. Co., 1200 Michigan Ave., Kenilworth, N.J.

Uniform Copper Finish

A copper finish that, it is said, assures uniform coverage by all types of acid-resistant inks without further surface preparation, has been developed. The manufacturer states that the finish permits good solder buildup and coverage, fewer rejects in the production of printed circuits, and more reliable performance when assembled in radios, television sets, computers, and other electrical equipment.

For further information, contact Dept. MPM, Taylor Fibre Co., Norristown, Pa.

Colored Film Tapes

Four metallized polyester film tapes in four colors have been announced. Especially suited for decorative purposes, the tapes come in burgundy red, emerald green, royal blue, and copper. The tapes utilize the standard 1 mil polyester backing and, it is claimed, retain long-aging, permanent bonding properties.

For further information, contact Dept. MPM, Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul 6, Minn.

Nylon Spray Hose

A paint spray hose that is made of a flexible nylon formation which is unaffected by solvents, paints, or thinners has been announced. There is a claimed dimensional change of zero due to action of heat and solvents.

Advantages claimed for the product are lighter weight, high internal abrasion resistance for use with porcelain finishes, and resistance to kinking or external abrasion. For further information, contact Dept. MPM, Synflex Products Div., Samuel Moore & Co., Mantua, Ohio.

Ceramic Grade Rutile

A ceramic grade, milled Virginia rutile, sold under the trademark Virflux C, is now available. It is recommended as a replacement for white titanium dioxide used in the production of porcelain enamel frits for sheet steel and cast iron.

The rutile is processed to minimize chromium and iron content. For white enamel, partial amounts are recommended as titania replacements; with color, larger amounts may be used. For further information, contact Dept. MPM, Metal & Thermit Corp., Rahway, N.J.

Thermostatic Actuator

A thermostatic high force actuator is now available for a wide range of uses, according to the manufacturer. It utilizes materials that expand as temperature increases to force a moulded synthetic rubber plug into a reduced diameter in the piston guide.

Uses claimed for the actuator include automobiles, heavy-duty engines, air conditioning, and home laundries. For further information, contact Dept. MPM, Detroit Controls Div., 5900 Trumbull Ave., Detroit 8, Mich.

Pneumatic Hammer

A pneumatic planishing hammer has been developed which smooths out wrinkles in sheet metal. It is floor mounted, has 18" throat clearance, and is operated by foot pedal.

For further information, contact Dept. MPM, Heidrich-Nourse Co., 631 E. Third St., Los Angeles 13, Calif.

Opposed Mandreled Seamers

A line of opposed double mandreled seamers, with both holding and clamping mandrels utiliz-



ing the same welding head, has been developed. Advantages claimed are continuous arc time, maximum production, and operational utility of one automatic welding head and power source.

For further information, contact Dept. MPM, Pandjiris Weldment Co., 5151 Northrup Ave., St. Louis 10, Mo.

High Voltage Spray Gun

A "super-charged" electrostatic hand spray gun is said to have the flexibility of a conventional paint spray gun plus high voltage and complete safety of operation. A safety feature cuts the voltage when the gun approaches a grounded object too closely. The paint, however, continues to be atomized.

The manufacturer claims that, with the use of the high voltage spray gun, paint costs are cut up to 80 per cent, operation is speeded up, and quality and uniformity of paint film is improved. For further information, contact Dept. MPM, H. G. Fischer & Co., 9451 W. Belmont Ave., Franklin Park, Ill.

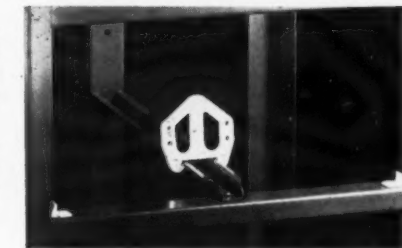
Refrigeration Sealers

A general-purpose line of sealers for domestic refrigerators, home freezers, ice cream cabinets, beverage and milk coolers, display cases, and other commercial refrigeration applications has been announced.

These black, mastic-type sealers are designed for application by high-pressure, heavy-duty pumps. They are said to remain unchanged when hot asphalt is poured over them. Adhesion can be had with steel, enamel surfaces, or aluminum. For further information, contact Dept. MPM, Prestite Div., American-Marietta Co., 39th & Chouteau Aves., St. Louis 10, Mo.

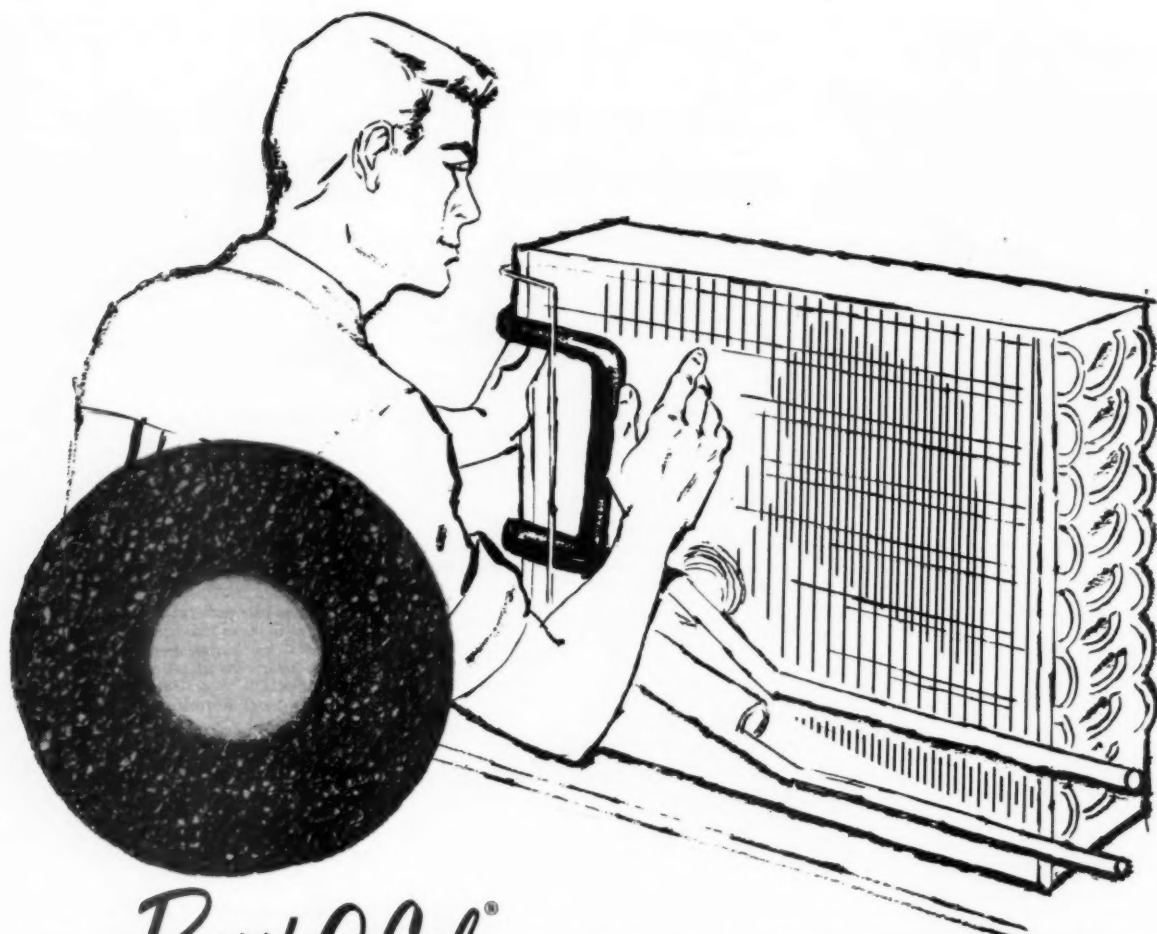
Suspension System

Metal cabinet manufacturers can now incorporate a three-point suspension drawer guiding



system. Center guiding is furnished by a self-lubricating bearing bolted or riveted to the rear of the drawer. The drawer rides on two self-lubricating guides, prepositioned in $\frac{3}{16}$ " punched holes.

For further information, contact Dept. MPM, R-Way Industrial Products, Box 718, Sheboygan, Wis.



New *Presst-O-Cel*[®] guards against condensation
and "sweating"... insulates... provides vapor barrier

This new lightweight neoprene tube and pipe insulation is made up of millions of tiny inert gas-filled cells with the result that it forms an effective wall against heat, cold or moisture wherever it is used.

Because it is so light and flexible, it makes an ideal material for covering tubes and pipes subjected to temperature or humidity conditions that might cause condensation or pose heat-loss problems—as on air conditioning and refrigeration lines.

In spite of its light weightness and softness, PRESST-O-CEL offers long-life durability: it is water and air tight; resistant to oil, acid and alkali; self-extinguishing; will not support fungus; resists rodents and vermin and has a high insulation factor.

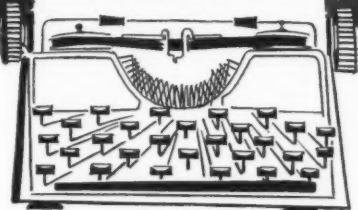
WRITE for more information on this amazing new product.

A free sample is also yours on request.



3786 CHOUTEAU AVENUE • ST. LOUIS 10, MISSOURI

NEWS



Maytag Increases Production

Company officials have announced that Maytag production rates on both automatic and wringer washers were increased as of May 11th. The increase raised employment levels by approximately 85 persons. Several six-day work weeks also are contemplated before July.

Production levels now approximately equal those of a year ago for dryers and wringer washers; automatic washer production has nearly doubled.

Crane Company Combines Sales And Purchasing

Crane Co. has consolidated its sales and purchasing divisions as part of a program aimed at increasing operational and organizational efficiency, according to Neele E. Stearns, president.

Stearns pointed out that since sales and purchasing are so closely related in the company, it is advantageous to combine the two functions. George F. Burley, newly-elected vice president of marketing and procurement, will head the combined divisions.

A. O. Smith to Move Water Softener Business

A. O. Smith's Permaglas Div. has announced plans to relocate its domestic water softener business in Kankakee, Ill., integrating production with its domestic water heater manufacture.

According to Milo Miller, general manager, consumer products, A. O. Smith will sell its water softeners under the Permaglas label, and a pilot run of several hundred water softeners has been scheduled upon completion of the move.

Cribben & Sexton Adopts New Trademark

A new trademark for its institutional cooking line has been adopted by Cribben & Sexton Co., Chicago, manufacturers of Universal appliances. George

W. Field, sales manager, stated that "Universal Chef" was adopted to more closely identify the division's products with the line of domestic appliances marketed by the company.

The commercial cooking equipment line includes ranges, broilers, fryers, ovens, and griddles.

Directory for ARI Certification Program

A new directory of certified unitary air-conditioners, listing 1,234 current models of 36 of the 42 companies participating in the ARI unitary air-conditioner certification program, has been published by the Air-Conditioning and Refrigeration Institute. In addition to the companies whose models are listed and rated under ARI standards, ten other manufacturers have signed contracts to participate in the program.

Prefabricated Stations to be Delivered

Cities Service Oil Co. and the Bettinger Corp. are completing preparations for delivery of a number of prefabricated package filling stations by the Bettinger Corp. Bettinger will incorporate a system recently purchased from Avco Mfg. Corp. The units will be delivered to the Northeast section of the United States.

Sahloff Named NHMA President

W. H. Sahloff, vice president of General Electric Co., Housewares and Radio Receiver Div., was re-elected president of the National Housewares Manufacturers Assn. by the board of directors. Also re-elected to their respective offices were G. C. Kubitz, vice president in charge of sales for Mirro Aluminum Co., Manitowoc, Wis., vice president; and B. C. Neece, president of Landers, Frary & Clark, New Britain, Conn., treasurer. The above three officers and Clarence O. Hamilton, executive vice president of Hamilton Cosco, Inc., Columbus, Ind., were re-elected members of the NHMA executive committee.

Caloric Gas Appliance Sales Up 35 Per Cent For First Quarter

Total gas appliance sales for the Caloric Appliance Corp. were up 35.3 per cent over the comparable first quarter of 1958, according to Julius Klein, president. He added that this figure compares with a general increase in the gas appliance industry of 15.9 per cent.

Klein stated that the sales increase was influenced in part by the trend to built-in appliances, by Caloric's emphasis on color-coordinated appliances, and

Kelvinator Ships Appliances to American Exhibit in Russia



George H. Beld (left), works manager of Kelvinator's Grand Rapids, Mich. plant, checks the Cyrillic alphabet spelling of his company's brand-name with B. A. Chapman, executive vice-president and general manager. Four Kelvinator appliances, including an automatic washer, clothes dryer, refrigerator, and "Foodarama" combinator refrigerator-freezer, are en route to Moscow to participate in this summer's American National Exhibition in the U. S. S. R.

by the Gold Star program of the American Gas Assn., which set up rigid requirements for performance, efficiency, and features.

Nine Units Added to Fedders Line

Fedders Corp. has introduced nine new air conditioners to its '59 line. Salvatore Giordano, president, and Edward M. Becker, sales manager, announced the new models in five special meetings to distributors throughout the country.

Of the nine models, two are 115-volt, 1 hp; 1 hp, 1½ hp and 2 hp units are available in 208 or 230-volts; and there is a 1 hp, 230-volt heat pump. Btu capacities appear on the electrical data name plates, as with other Fedders models.

Home Furnishings Show at Merchandise Mart

The International Home Furnishings Market will be held June 15-26 in Chicago's Merchandise Mart. The 15th Floor Merchandisers Club will hold a special decorative accessories show in conjunction with the Market.

Ashdee Opens New Lab

Ashdee Electrostatic Div., Industrial Electronics Co., has set up a new electrostatic painting laboratory in Joliet, Ill. Other Ashdee labs are located in Dallas, Texas and Milan, Italy.

Ing-Rich, Moffats Sign Agreement

A licensing agreement has been completed between Ingram-Richardson Mfg. Co. and Moffats, Ltd. of Canada. The agreement will enable the Canadian company to manufacture a series of Ing-Rich architectural porcelain enamel panel designs, and makes available certain Ing-Rich engineering services to Moffats.

United Wallpaper's Sales, Profits Rise

United Wallpaper, Inc., manufacturer of paints, resins, and other products, has announced that they experienced a record demand during the past calendar quarter. Their principal product, paint, evidenced a strong demand in both the industrial and retail fields. Sales for the quarter were \$12,439,912, compared to \$9,852,319 last year, a 26.3 per cent increase.

For the company's fiscal year to date, or the past nine-month period,

sales were \$32,649,955, an increase of 20.3 per cent over the corresponding period of the previous year. The report states that heavy paint shipments are expected in the current quarter as this is the peak season in the paint industry.

Fostoria, Chempump Directors Approve Merger Plan

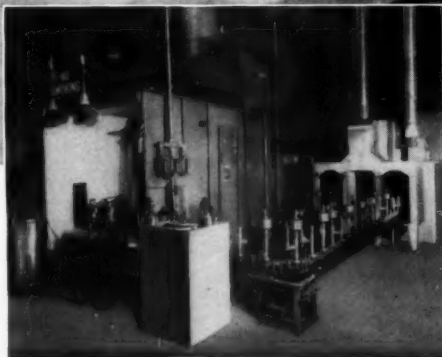
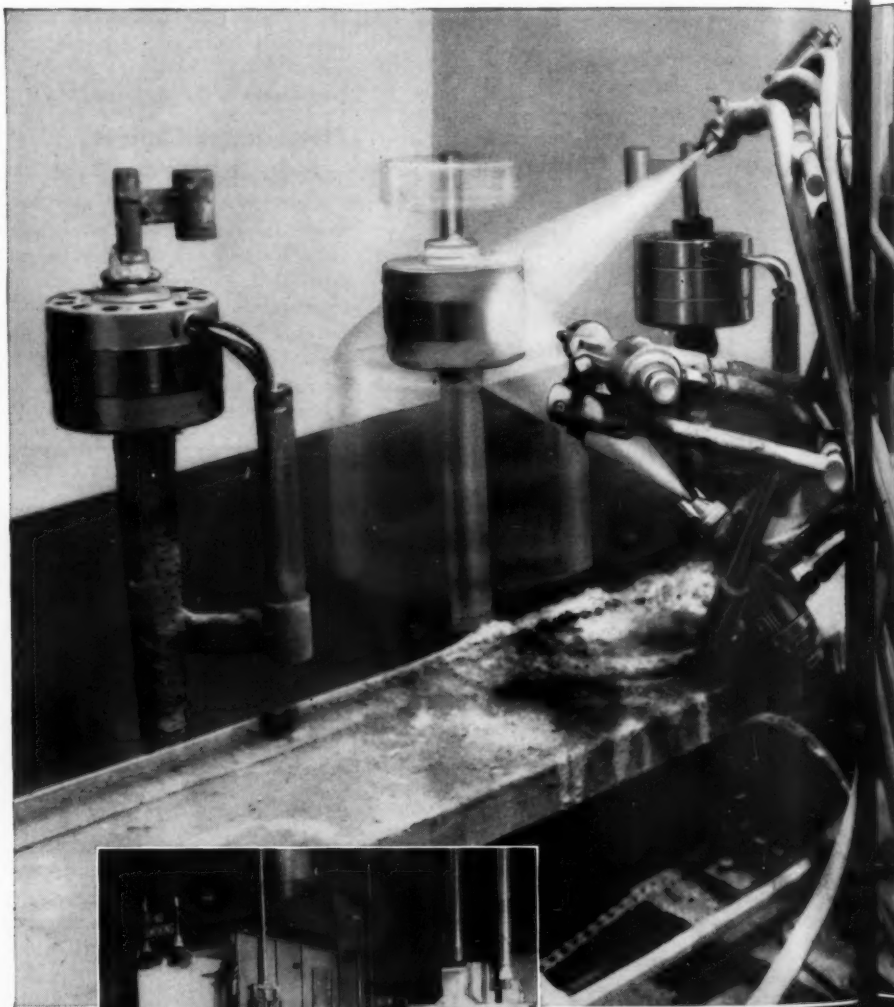
Directors of the Fostoria Pressed Steel Corp., Chempump Corp., and Zenith Engineering Corp. have approved a proposal to merge the three concerns, subject to ratification by each company's shareholders. The combined

company would be known as Fostoria Corp., and would continue intact the activities of the present companies.

Fostoria presently manufactures industrial lighting units, infra-red ovens, and seal-less pumps. Chempump manufactures seal-less pumping equipment for many industries, including the refrigeration industry. Zenith, an affiliate of Chempump, is an engineering development and patent holding company.

New ARI Directory Published

A new directory of certified unitary air conditioners, listing 1,425 models of



Above: Binks Model 21 automatic spray guns paint top, side and bottom of each motor. Motor rotates when in front of the guns.

Left: Overall view showing one of two similar painting operations.

38 of the 46 companies participating in the ARI unitary air conditioner certification program, has been published by the Air-Conditioning & Refrigeration Institute. Eight other manufacturers have signed to participate in the program. This represents well over 80 per cent of total industry shipments of unitary air conditioning equipment.

PEI, ASID Announce Cooperative Program

The launching of a cooperative program aimed toward developing a closer working relationship between members

of the industrial designers' profession and the porcelain enamel industry was recently announced by John C. Oliver, managing director of the Porcelain Enamel Institute.

Conducted in cooperation with the American Society of Industrial Designers, the program is intended to provide product information on both decorative and protective porcelain enamel to leading industrial designers. It is part of the design engineering program initiated and sponsored by PEI's Frit-on-Steel Div. to extend present uses and promote new applications of porcelain enamel.

Admiral Sales Up 16 Per Cent

Admiral Corp. has reported that first quarter sales were up 16 per cent over the corresponding period of 1958. Earnings before taxes were almost \$1½ million, as compared with pre-tax earnings of \$152,000 in '58 for the first quarter.

ASWA Elects Stewart

The election of George L. Stewart as president of the American Steel Warehouse Assn. for the coming year was announced at the organization's 50th annual meeting in Chicago. Stewart is president of Jones & Laughlin Corp.'s Steel Warehouse Div.

Other officers elected were C. L. Hardy, president of Joseph T. Ryerson & Son, Inc., chairman of the association's executive committee; Robert G. Welch, re-elected executive vice president of the national trade assn. of steel service centers; W. R. Winter, Williams Hardware Co., and William F. Colclough, The Cincinnati Steel Products Co., vice presidents; and Ralph W. Shaw, Jr., A. R. Purdy Co., treasurer.

Riverside Plastics Buys Bischoff Chemical Corp.

Riverside Plastics Corp., Hicksville, N.Y., has announced the purchase of Bischoff Chemical Corp., formerly owned by Miles Laboratories. Bischoff manufactures protective strippable plastic coatings, which are widely used for protecting metal cutting tools and metal parts during shipment, storage, as a stop-off in plating, and similar applications.

Van Norman Acquires American Pulley

Van Norman Industries, Inc. announced that it has acquired working control of American Pulley Co., in which it has held a minority interest for the last three years. Charles F. Myers, Van Norman president and newly-elected president of American Pulley Co., stated that American Pulley will be continued as a separate organization, with no further changes in personnel.

American Pulley is a Philadelphia company manufacturing materials handling equipment and pressed metals specialties.

NEMA Publishes Three Booklets

The National Electrical Manufacturers Assn. has published three booklets to sell for 30 cents per copy. The first, entitled "Industrial Heating Units

At the Westinghouse Electric Corporation
Small Motor Division Plant, Upper Sandusky, Ohio...

Binks spraying machine paints motors...in seconds

"Our Upper Sandusky plant was designed for production of small motors with 5-year guarantees," reports Mr. H. A. DePree, chief of manufacturing planning for this Westinghouse plant. "To do this, we automated every process, including finishing, to achieve maximum quality control."

Automatic, 2-color finishing

With Westinghouse engineers, Binks developed a spraying system that insures uniform 3 mil finishing of motor parts and assemblies . . . even sprays 2 colors on command from coding devices.

Better finishing for your products

This Westinghouse installation is

typical of thousands where Binks engineers and equipment have assisted in helping a manufacturer reduce finishing costs . . . boost quality. This Binks finishing knowledge and equipment team is available to you.

Free finishing analysis

Whether you use materials that flow like water or have the body of heavy coatings . . . Binks will show you the method of application best suited to your needs. The analysis will be made under production conditions, using your products and your finishing and coating materials. There is no obligation. Just call your Binks Branch Office or write direct.

Ask about our spray painting school
Open to all...NO TUITION...covers all phases

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EVERYTHING FOR
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... OUT OF THE HOT HOUSE

Nature produces beautiful flowers at a variety of temperatures. This same latitude can be yours when you use Hommel porcelain enameling oxides...they're stable over a wider firing range...don't bleach. You'll also find Hommel oxides stronger...saving you money in broader coverage. Hommel oxides are tested and re-tested before delivery...guaranteeing uniform performance every time. The Hommel research staff stands always ready to solve your individual oxide requirements.



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PORCELAIN ENAMEL

OXIDES

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Our Technical Staff and Samples are available to you without obligation. Let us help with your problems.

World's Most Complete Ceramic Supplier

and Devices," deals with cartridge, tubular, strip, and immersion heaters.

"Precision Snap-Acting Switches" includes information on the application of industrial limit switches. The third publication, "Color Coding of Wires and Cables," shows actual color coding of wires and cables.

'58 Galvanized Sheet Shipments Up 18 Per Cent

According to Leslie Irvine, assistant vice president of sales for Wheeling Steel Corp., total shipments of galvanized steel sheets rose 18 per cent during 1958, and during the last ten years, galvanized steel shipments registered a 72-per cent increase.

These figures were reported in a talk at American Zinc Institutes' 41st annual meeting in Chicago. Irvine added that galvanized steel shipments accounted for 4.7 per cent of all steel shipments in '58.

White Sewing Machine Reports 20 Per Cent Increase

An increase in first quarter net income, based on a 20 per cent increase in sales over first quarter figures one year ago, was reported by White Sewing Machine Corp. in a statement by Board Chairman Vollmer W. Fries and President Edward S. Reddig.

Fries and Reddig stated that the improvement in both sales and earnings has been generally reflected in all divisions of the corporation; Home Equipment, Apex Reinforced Plastics, and Industrial Supply.

ASM Appoints Putnam

Appointment of Allan R. Putnam as managing director of the American Society for Metals has been announced by Clarence H. Lorig, president of the metals engineering society. Putnam occupies a new position established by the ASM board of trustees last May.

First Quarter Aluminum Shipments

The Aluminum Assn. reports that total shipments of aluminum for the first quarter reached 337,684,000 pounds. Of the total, non-heat-treatable shipments accounted for 277,010,000 pounds, and heat-treatable aluminum shipments were 60,674,000 pounds.

Norge April Sales Set Record

April factory sales of Norge home appliances were 69 per cent ahead of the

corresponding 1958 month, bringing about the largest volume of sales for April in the company's history. Judson S. Sayre, the division's president, stated that sales were 43 per cent ahead of April, '57, a big appliance year. He added that home freezers alone rose 248 per cent.

Vesce Named Lecturer at Paint & Varnish Meeting

Vincent C. Vesce, technical director for Harmon Colors, Allied Chemical's National Aniline Div., has been selected to present the annual Joseph J. Mattiello memorial lecture at the 47th meeting

of the Federation of Paint & Varnish Production Clubs. The meeting will be held in Atlantic City, October 22-24.

The subject of Vesce's lecture will be "Exposure Studies of Organic Pigments in Paint Systems," and will be given October 23rd in the American Room of the Traymore Hotel.

Siegler, Rheem Sign Manufacturing Agreement

A joint manufacturing arrangement for the manufacture of consumer products has been entered into by the Siegler Corp. and Rheem Mfg. Co. John G. Brooks, Siegler president, and A. Light-

IAM 27th Annual Convention and Exhibit Scheduled

The Institute of Appliance Manufacturers will hold its 27th Annual Convention and Exhibit at the Netherland-Hilton Hotel, Cincinnati, Ohio, June 1-3.

An interesting and varied program has been arranged, and prominent speakers have been retained to highlight the three-day session.

SCHEDULE OF EVENTS

SUNDAY, MAY 31

4:00 EXHIBIT PREVIEW

Reception for exhibitors by the officers and trustees of the Institute of Appliance Manufacturers. This informal party gives early arrivals a chance to get an advance look at the exhibits before the convention opens.

MONDAY, JUNE 1

10:00 KEYNOTE SESSION

ANNUAL REPORT TO THE INSTITUTE

F. H. GUTHRIE, President
Institute of Appliance Manufacturers
"REBUILDING PROFITS AND PRESTIGE"

WALTER JEFFREY
Vice President and General Manager
Kelvinator Division, American Motors Corporation

"WHAT ARE RETAILERS REALLY SELLING IN APPLIANCES?"

C. VIRGIL MARTIN, President
Carson, Pirie Scott & Company

2:00 MEETING OF BOARD OF TRUSTEES

TUESDAY, JUNE 2

10:00 GENERAL SESSION

"THE BUSINESSMAN'S STAKE IN WORLD AFFAIRS"

JOHN F. DAY, Director of News
Columbia Broadcasting System

FOREIGN TRADE CONFERENCE

Euro-mart Potential . . . Engineering and Production Transition from U. S. to Overseas Operation . . . Influencing

Government Regulation Through Common Sense Approach . . . Inventiveness in Production Methods to Make the Most of a Small Market . . . Approach to International Business — License, Contract, or Ownership?

Panelists will include: J. M. A. Klep, Manager, "DE ETNA", Breda, Holland; Baj Macario, President, Comite European Des Fabricants d'Appareils de Chauffage & de Cuisine Domestiques, Italy; S. J. Ferrier, Managing Director, E. S. & F. Ferrier Pty Ltd., Australia; Marc Resek, President, Marc Resek & Associates, Inc., U. S. A.; Remy H. Ludwig, Export Consultant, U. S. A.

12:30 LUNCHEONS FOR PRODUCT GROUPS

Kitchen Equipment including Ranges Gas and Oil Heaters
Charcoal Grill Manufacturers
Solid Fuel Stove Manufacturers

2:00 CHARCOAL GRILL MANUFACTURERS MEETING

7:30 "OVER THE RHINE" SUPPER PARTY

"Vas You Efer in Zinzinnati?"

WEDNESDAY, JUNE 3

10:00 GENERAL SESSION

"WHAT ARE THE REAL APPLIANCE SERVICE PROBLEMS?"

For Consumers:
MARGARET DAVIDSON, Home-making Editor
Ladies' Home Journal

For Manufacturers:
ROBERT P. LEWIS, Director of Consumer Relations
Whirlpool Corporation

12:30 ROUNDUP LUNCHEON

TIME SCHEDULE

	REGISTRATION	EXHIBIT HOURS
SUNDAY, MAY 31.....	3:00- 5:00	Preview Party, 4:00-6:00
MONDAY, JUNE 1.....	9:00- 5:00	9:00-10:00 and 12:30-5:30
TUESDAY, JUNE 2.....	9:00- 5:00	9:00-10:00 and 12:30-5:30
WEDNESDAY, JUNE 3.....	9:30-12:30	9:30-12:30

From General Motors...

A RELIABLE SOURCE OF QUALITY DIE CASTINGS

Brown-Lipe-Chapin offers you extensive die casting, electroplating and stamping facilities for immediate volume production!

In a new diversification program, Brown-Lipe-Chapin offers its die casting and metal stamping services to manufacturers outside the automotive field. Leaders in the field of quality bright work, Brown-Lipe-Chapin now seeks to contribute proven quality and add new sales appeal to your product.

You'll get results in reliability! A fully qualified staff of engineers—experienced and skilled in all phases of die casting and steel or aluminum stamping—will recommend the best and most economical way of producing your parts. Also, you will find that the low cost includes a number of important Brown-Lipe-Chapin extras that add nothing to the price, yet may add significant advantages to your product.

Here are some important Brown-Lipe-Chapin extras:

- Facilities for mass-producing die castings and steel or aluminum stampings, with related processes of anodiz-

ing, electroplating and painting all under one roof.

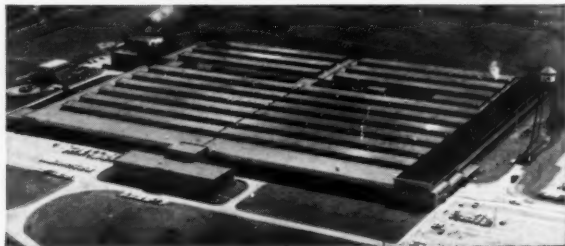
- Quality that's rigidly controlled step by step . . . quality that has been proven by successfully meeting the rigid standards and specifications of the automotive field for years.
- Advance research to improve products and methods. For example, recently a new dimension in durability was achieved with the first major advance in the chrome plating industry in twenty-five years.
- Mass-production experience that assures delivery to meet your schedules right on time.
- A guarantee to every new customer to supply their die casting and stamping requirements for as long as they may want to specify.

We welcome the opportunity to talk to you about your current needs and future plans. Contact Brown-Lipe-Chapin, Division of General Motors Corp., Syracuse, N.Y.



SYRACUSE, N. Y.

This 10-acre plant has complete modern facilities to stamp, die cast, anodize, plate and paint parts to exact specifications.



ELYRIA, OHIO.

This 15-acre plant is equally capable of supplying your volume requirements. And its central location means fast delivery.



RELIABILITY by BROWN · LIPE · CHAPIN

D I V I S I O N O F G E N E R A L M O T O R S C O R P O R A T I O N

foot Walker, president of Rheem, said the arrangement will affect plants of both companies located in Southern California.

The plan calls for the manufacture of Siegler water heaters at the Rheem plant in South Gate. Concurrently, plans are being made for the production of Rheem heating equipment at Siegler's Pasadena plant.

Republic Steel Earnings Go Up

C. M. White, board chairman of Republic Steel Corp., has reported that net income for the first quarter amounted to \$26,844,585, over three times greater than earnings for the same period one year ago. Earnings per dollar of sales were 8.4 cents, a record level.

In March, the company broke its steel ingot production record by producing 1,013,435 tons of ingots. White stated that "We may equal or exceed both first quarter earnings and shipments in the second quarter."

Armalite Licensed by Northwest Chemical

Northwest Chemical Co., Detroit, has licensed Armalite Co., Ltd., Toronto, to manufacture and sell its products in Canada. Armalite has organized a new division, known as the Alkali Div., which will be managed by D. E. Wellman, who has represented Northwest Chemical for many years. Through Armalite, new products developed by Northwest will be available in Canada.

First Quarter Sales Up 13.8 Per Cent at Interchemical

Interchemical Corp.'s sales totaled \$29,480,000 for the first quarter, a rise of 13.8 per cent, compared with the \$25,907,000 figure in the corresponding period of 1958, according to H. B. Woodman, president. Woodman added that present volume shows a continuation of the upward trend which began last summer and, given a continuation of the present level of business activity, Interchemical would show an appreciable improvement for this year.

Leece-Neville Purchases A.C. Motor Division

Leece-Neville Co., Cleveland, has announced the purchase of the A. C. Motor Div. of the O. A. Sutton Co., Wichita, Kansas. P. H. Neville, president, stated that the acquisition is designed to diversify Leece-Neville's prod-

uct lines. While specific figures of the transaction were not revealed, Neville added that the move represented a million dollar expansion for the company.

At the new division, motors will be produced for use on air conditioners, fans, dehumidifiers, evaporative coolers, furnaces and space heaters, and similar products.

Kelvinator-U.S. Eliminates Top Management Position

A top management change, which involves elimination of the position of vice president and general manager, has been announced by the Kelvinator U.S. Div., American Motors Corp. B. A. Chapman, executive vice president and

AHLMA Convention Announced

The 1959 convention of the American Home Laundry Manufacturers' Assn. has been organized and designed to be of interest to member company management, according to Guenther Baumgart, president of AHLMA. "Speakers will evaluate the industry's position as we enter the 1960 decade. Probably more

than at any previous time, the convention is being devoted to problems of interest and eminence to the industry, itself," Baumgart said. Participants on the program have been selected predominantly from among leaders of the industry, representing various areas of interest.

1959 American Home Laundry Manufacturers' Association Convention HOME LAUNDRY PROGRESS FOR THE 1960'S

Thursday and Friday, June 18-19, 1959

Edgewater Beach Hotel, Chicago, Ill.

T. D. KENNEDY, Frigidaire, Convention Chairman

THURSDAY, JUNE 18

9:00 A.M. - 12:00 Noon Committee Meetings
12:00 Noon - 2:00 P.M. Committee Luncheon
2:00 P.M. - 5:00 P.M. Committee Meetings
6:30 P.M. - 8:00 P.M. Officers Reception - Informal - Pool Terrace
8:00 P.M. - 10:30 P.M. Buffet Supper - Ballroom

FRIDAY, JUNE 19

7:00 A.M. - 8:50 A.M. Breakfast - Marine Terrace
8:30 A.M. Coffee Bar Opens
8:50 A.M. Assemble (Coffee bar closed)
9:00 A.M. - 5:00 P.M. General Convention - Michigan Room
6:00 P.M. - 7:00 P.M. Reception - Informal - Pool Terrace
7:30 P.M. - Midnight Banquet, Entertainment & Dancing (To be announced)
9:00 A.M. President's Report
9:08 A.M. Report on Self Service Laundries (4 talks of 5 minutes each)
"How Did They Start" Harry Greenwald, Greenwald Manufacturing Company
"How Big Are They" M. H. Steckel, Launder-Matic Age
"What Are Related Vending Opportunities" Allen Foster, Vend-A-Mation Co.
"How Big Will They Get" G. O. Kaye, Kay Vending Machine Co.
9:40 A.M. Open Forum T. D. Kennedy, Frigidaire
10:00 A.M. Defining Our Terms (20 min.)
Mary Margaret Boyer, Maytag, Chm., Definitions Subcom.
Engineering and Research Trends into the 1960's
H. E. Van Scoyk, Frigidaire (20 min. paper)
George Conlee, Speed Queen (10 min. critique)
(Speaker from Whirlpool) (10 min. critique)
Open Forum (15 min.)
11:00 A.M. Cake Break
Materials and Component Trends for the 1960's
D. M. Strathearn - Electric Controls (5 min.)
C. C. Daily - Rubber (5 min.)
R. L. Campbell - Valves (5 min.)
R. M. Buddington - Steel (5 min.)
C. O. Hutchinson - Finishes (5 min.)
Rose White - Laundry Aids (5 min.)
Open Forum (15 min.)
12:00 Noon to 2:00 P.M. Polynesian Village - Reception and Lunch
The State of the Industry
James H. Goss, General Electric
Homer L. Travis, Kelvinator, Chairman of AHLMA's Board of Directors will preside.
2:00 P.M. - 5:00 P.M. - Michigan Room
Population - Customers - and Where They Will Live
P. M. Hauser, University of Chicago (30 min.)
Comments - George Westfall, Hotpoint (10 min.)
Open Forum (20 min.)
Our Customers Speak - A report on AHLMA's consumer research among a large sample of the industry's recent customers.
L. C. McAnly, Maytag - Report (20 min.)
J. D. Lee, Westinghouse - Evaluation (10 min.)
Rose Marie Burke, Forecast for Home Economists-Evaluation (10 min.)
Open Forum (20 min.)
4:00 P.M. Third Man Theme (25 min.) An evaluation of the industry as it enters 1960 by our most competent observers.
Laurence Wray, Electrical Merchandising
Jack Adams, Mart
Vic Petchul, Appliance Manufacturer
Dana Chase, Metal Products Manufacturing
Jack Blood, Home Furnishings Daily
Moderator - Joseph Smith, Westinghouse
Open Forum
5:00 P.M. Adjourn (to Banquet)

general manager of the Appliance Div., explained that Walter Jeffrey, who held the post since 1956, had resigned. Sales aspects of the position will be assumed by Homer L. Travis, vice president in charge of sales for Kelvinator-U.S.

Industrial Design Head Predicts Appliance Future

In a talk before the Chicago chapter of the Electrical Women's Round Table, April 27, Montgomery Ferar, president of Sundberg-Ferar, Inc., Detroit, stated that appliances of the future will become more portable, performing their function in any room, and will be chosen as much for design beauty as well as for function.

The industrial design firm president added that, in time, appliances will be rented, instead of sold, offering the manufacturer a guaranteed market. Said Ferar, "This will relieve the consumer of service problems, for with a rental system, service problems will be taken care of by the manufacturer, who retains ownership of the product."

Presstime News

Ilg Buys General Blower

W. H. Rietz, Ilg Electric Ventilating Co. president, has announced the purchase by Ilg of General Blower Co., Morton Grove, Ill. General Blower will operate as a division of Ilg and manufacture industrial fans, turbo blowers, heat fans, and forced draft equipment.

A. O. Smith Division Buys Micron Fuel Filter

The Smith-Erie Div., A. O. Smith Corp., Milwaukee, Wis., has purchased the Micron Fuel Filter business, according to H. G. Smith, divisional manager. All of the machinery, tools, and inventory of Micron will be moved to the Smith-Erie facilities in Erie, Pa.

Ronald A. Burks, who developed the micron fuel filter and water separator line, has joined the division to head up the new line.

Westinghouse To Supply Data Accumulation System

Westinghouse Electric Corp.'s systems control department has received an order from a major producer of steel for a data accumulation system for tin plate production.

Purpose of the system is to process, store, and print on continuous cards specific data that will provide a permanent record of all material included in

Scovill Manufacturing Company Opens \$10,000,000 Tube Mill

An aerial view of the recently - completed Scovill Tube Mills at New Milford, Conn. The plant was built at a cost of \$10,000,000. Much of this plant's output will go to the plumbing, heating, and air conditioning fields.



tin-plated coils. Data on defective material will be subdivided to cover under and over-gauge material, light and heavy plating, pin hole detection and results of visual inspection.

Bruning Relocates Chicago Branch

Relocation of the Chicago branch of Charles Bruning Co., Inc., manufacturer of diazotype reproduction machines and sensitized materials, has been announced by Frank DiCanio, branch manager. Bruning will operate out of the Congress-Franklin-Wacker Building in Chicago's central business district.

Kelvinator April Sales Jump To Jan. '57 Level

Kelvinator appliance sales for major products jumped 50.1 per cent in April over a year ago, and marked the highest monthly volume since January, 1957, Homer L. Travis, vice president-sales, recently announced.

Refrigerators, up 50.8 per cent, also reached the highest monthly total since Jan. '57, and home laundry equipment, including automatic washers, wringer washers, and electric dryers, climbed 49 per cent. Home freezers soared 72.7 per cent and free-standing ranges were

up nearly 30 per cent over the April '58 figures.

This followed a quarterly increase in Kelvinator sales of 21.4 per cent.

Reynolds To Boost Aluminum Output

R. S. Reynolds, Jr., president of Reynolds Metals Co., announced that the company will boost its primary aluminum output to 93 per cent of the annual rated capacity of 601,000 tons. Reynolds said that the additional metal is needed to meet present market demands for pig and ingot.

Reynolds is restarting one potline at its Listerhill, Ala. reduction plant and about three-fourths of a line at its Jones Mills, Ark. plant, adding 15,000 tons to the annual production rate at each plant. Reynolds is now producing at a production capacity of 89 per cent.

United States Steel Corp.'s chairman of the board, Roger M. Blough, has announced the election of **Walter E. Munford** as president and chief executive officer. He succeeds Clifford F. Hood, who has retired.

Munford was also elected a director and chairman of the executive committee

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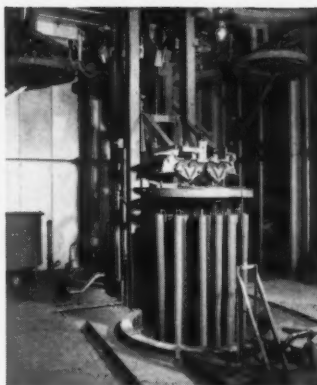
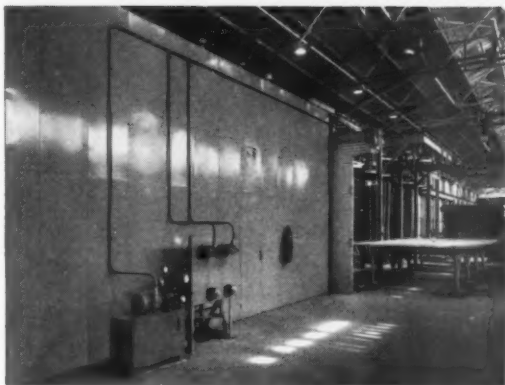
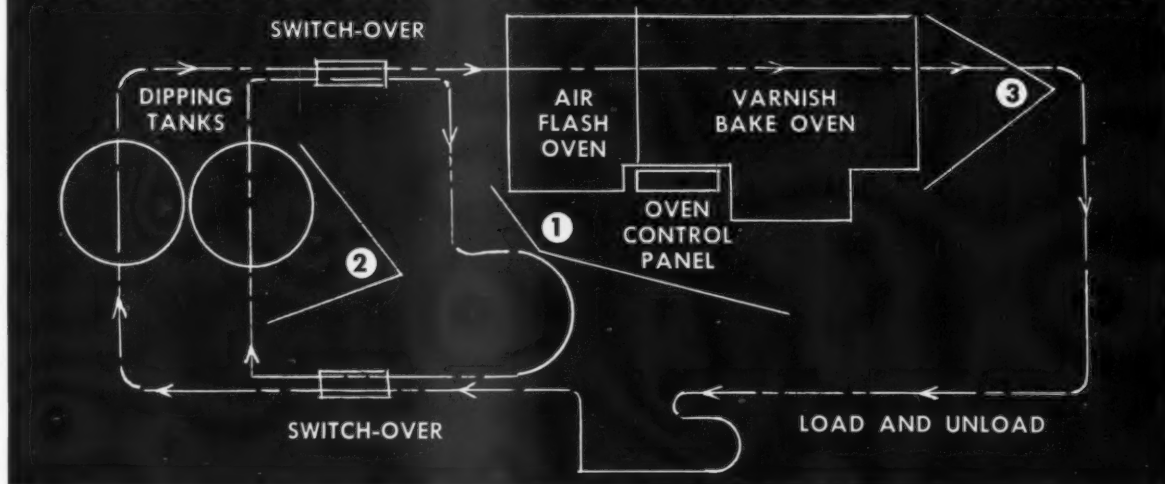
\$1,000,000 Warehouse for Cole Steel Equipment Division



Above is an artist's conception of a new \$1,000,000 warehouse for the Masell Mfg. Div. of Cole Steel Equipment Co., Inc., which is to be completed by the end of the year. Located in York, Pa., the building, which will have 250,000 square feet of floor area, will warehouse a complete line of office equipment and furniture.

INTEGRATED

FINISHING SYSTEM DESIGNED FOR TODAY'S PRODUCTION . . . TOMORROW'S POTENTIAL



WALKER BROS. has Doubled Production with this MOCO SYSTEM

Custom-engineered for Walker Brothers of Conshohocken, Pa., manufacturers of quality electrical distribution materials, this Michigan Oven Finishing System is *integrated* for increased product quality, lower operating cost and greater safety. All with higher production volume.

The MOCO ovens shown above feature design simplicity, hazard proof construction, with numerous safety features. Designed to speed the application of an acid and alkali resistant enamel coating over the zinc coated steel electrical conduit, the MOCO installation has doubled former production, even though it is presently operating at only 50% of its rated capacity.

Alternate dipping system uses two tanks, each with

separately-controlled, variable rate of immersion, withdrawal, and dwell time. Conveyor layout permits the use of either or both tanks at any time. MOCO Integrated Finishing System includes tank, filters and pumps, as well as complete heating and temperature control equipment for the enamel coating.

Enamelled conduit, 10 ft. long and up to 6 inches in diameter, pass through 105° Air Flash Oven, then through the 450° Bake Oven. Overlapping exit doors (above) help maintain even temperature within the Bake Oven. Conveyor holds up to a ton of conduit on each rack, moves 6'0" every six minutes; conduit passes through both ovens in 24 minutes. Except for loading and unloading of racks, entire operation is automatic.



FREE—Send for your MOCO bulletin showing typical finishing system applications and specifications, or write for the name of the MOCO Representative nearest you.

MICHIGAN OVEN COMPANY



FINISHING EQUIPMENT DEPARTMENT
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Washing Machines • Bonderizing Units • Dry-off Ovens • Dip Tanks
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Metal Preparation
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Pennsalt's exclusive Metal Preparation Service Plan gives you complete, planned service geared to the needs of modern high-speed operation. From a nation-wide staff of specialists, you get aid in analyzing new surface preparation needs . . . help in installing equipment and training personnel . . . periodic check-ups with complete recommendations for improved operation . . . laboratory analyses of your special problems . . . advice on thrifty purchasing . . . fast emergency service.

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INDUSTRY PERSONALS

Metal & Thermit Corp. has announced the election of **Herbert E. Hirschland** as vice president of commercial development, according to H. E. Martin, president. The Commercial Development Div. includes the functions of product development, market development, and market research. Research emphasis will center on organic chemicals and organometallics.

Durkee-Atwood Co., Minneapolis, Minn., has announced the election of **Carter B. Haley** as vice president in charge of the Industrial Div.'s sales, according to E. P. Atwood, president. Haley has been associated with the firm for nine years. His most recent post was sales manager of the Industrial Div.



HIRSCHLAND



HALEY

Kolene Corp.'s board of directors has elected **John A. Falter** to the office of vice president in charge of engineering. He has served as chief engineer for Kolene since 1950. The firm manufactures molten salt bath processes and equipment.

Associated Spring Corp., Bristol, Conn., has appointed **Lewis D. Fykse** as director of marketing, according to Carlyle F. Barnes, president. He had been marketing services manager for American Machine & Foundry Co. for the past two years.

Fykse will be responsible for guiding all sales, market research, and advertising activities of the corporation and its twelve operating divisions.

FALTER



FYKSE



Holly-General Co., a division of the Siegler Corp., has named **Lee D. Nutter** vice president in charge of marketing, according to Robert K. Miller, president of the Pasadena firm. Prior to joining Holly-General, Nutter had been associated with the General Electric Co. in a variety of executive sales positions.

Proctor Electric Co., Third and Hunting Park Avenue, Philadelphia, Pa., announces the appointment of **H. F. Bond** to represent them on the West Coast. Proctor Electric are manufacturers of electric range controls and other products. Bond, who has been associated

with electric appliance firms for twenty years, will be located at 2390 East Foot-hill Blvd., Pasadena, Calif.

Temco, Inc.'s president, F. Donald Hart, has appointed **Louis R. Farber** as marketing manager. Farber will continue his duties as advertising and sales promotion manager, a position he has held since January of this year.

Patterson Foundry & Machine Co., East Liverpool, Ohio, has named **A. T. Jacobson** as sales manager, according to G.E. Weber, vice president of Ferro Corp., Patterson's parent company. Jacobson joined Patterson in 1948 as

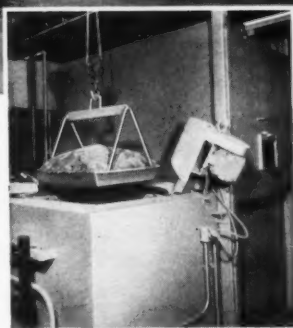
Porcelain Rejects Stripped in 5 to 15 Minutes



Washing Machine tops leave Kolene deNAMEL unit after brief 10-minute immersion in salt and brief water rinse. No attack on base metal. Process is highly efficient, easily operated, clean, safe, and fume-free!

New deNAMEL Process SAVES DOLLARS!

- ① Even complicated porcelain enameled parts are stripped clean in 5 to 15 minutes.
- ② Leaves no trace of porcelain in corners, crevices, or points of heavy build-up.
- ③ This new Kolene process is exclusive and unique. There is no other comparable system available. We furnish deNAMEL chemicals, Kolene custom-engineered equipment, know-how and service. No divided responsibility!



Controlled agitation circulates sludge and assures proper settling in the side sludge zone system. Sludge easily and quickly removed with overhead hoist.

KOLENE

LEADER IN SALTBATH CLEANING

Licenses in principal foreign countries. Cable address: KOLDET

NOTE: As a customer service, Kolene operates a jobbing division. Ship parts for process evaluation.

KOLENE CORPORATION
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district manager for the Detroit office, a position he held until his present appointment.

Patterson Foundry manufactures a wide range of equipment for the chemical, paint, ceramic, and other process industries.

Fenestra Corp.'s president, H. D. Palmer, has announced the election of **Edward A. Miller** as executive vice president. He will continue to be in charge of the Building Products Div. at Fenestra.



MILLER



WALTON

Crucible Steel Co. of America has appointed **E. T. Walton** director of metallurgy. He succeeds **D. I. Dilworth**. Walton will assume responsibility for the direction and coordination of stand-

ards and procedures, quality control methods, technical customer service, manufacturing standards, and raw material specifications.

Solventol Chemical Products, Inc., Detroit, manufacturers of cleaning compounds for use in the metalworking industry, has announced the election of **Robert W. Huffman** as president and general manager. He succeeds **Howard Downs**, who has resigned.

Capitol Products Corp., Mechanicsburg, Pa., manufacturer of aluminum building products, chemical industry equipment, and other industrial apparatus, has named **William J. Strandwitz, Jr.** as executive vice president and director. He had been a vice president and chief executive officer for the company's Read Standard Div. at York, Pa.

Waste King Corp., Los Angeles, has announced the promotion of **Boyd T. Marshall** from vice president-engineering program development to vice president-general manager of the Technical Products Div.

Other Technical Products Div. promotions include **Frank J. Gallagher** from plant superintendent to chief man-

to Page 86 → (see photos below)



**We're
delivering
STEAKS!**

Every time the production facilities at Stanley stamp out or form another part . . . We're delivering

Quality

Dependability

Practical Pricing

All add up to "Honest-to-goodness" profit for our customers. We call it . . .

Delivering Steak

Have some . . . it's yours for the asking. Let us quote on, or deliver one job of **Wire Forms . . . Springs or Metal Stampings**, and you'll agree.

The added service, quality and dependability you get from Stanley is good for you!

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Spring 7-2600

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**cuts painting
costs up to 40%**

- Speeds production . . . minimizes housekeeping . . . increases safety.
- Puts paint only where you want it! Atomizes paint by high pump pressure—without use of heat, without atomizing air!
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HUFFMAN



STRANDWITZ



MARSHALL

YOU *MAY* have a special **FRIT** problem



One thing is sure—*some do*—

BUT Ing-Rich ceramic engineers working day in and day out with the practical technicians in our large job enameling plant have produced a wide range of "plant tested" FRITS—many of which resulted from "special" problems.

YOURS COULD BE DIFFERENT

Ing-Rich ceramic engineers, without obligation, will honestly advise you if any of our Frits will do your job—OR—if they find you *do have* a special frit problem, will work with you to develop the correct FRIT.

WE BRING YOU VALUABLE KNOW HOW

We believe most ceramic engineers will agree that after exhaustive test in the "Lab" there comes another test of equal importance—*what happens* under practical working conditions.

Our ceramic engineers can bring you that valuable "Know How."



INGRAM-RICHARDSON, INC.
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FRANKFORT, INDIANA

*Want to strip
an "unstrippable"
coating?*

ask Oakite

OVER 50 YEARS CLEANING EXPERIENCE • OVER 250 FIELD SERVICE MEN • OVER 160 MATERIALS



Even tough EPOXY FINISHES peel off in Oakite STRIPPER S-A

Burn off an epoxy finish from a reject as a last resort? Not at all necessary. Oakite STRIPPER S-A strips metals clean. That's true for multiple coats as well as single coat epoxy finishes. Look at STRIPPER S-A's record:

- A 3/16" thick coating built up from layers of epoxy coating and wrappings of fiber glass was stripped from gun barrels by overnight soak in Stripper S-A. Everything tried previously had failed.
- Brass plated steel parts were stripped of their epoxy finish in matter of minutes.
- Workholding spindles and racks laden with at least 10 coats were stripped to bare metal by a short soak. Paint hooks formerly burned clean are now soaked clean instead.

This powerful stripper is safe for all metals except zinc and magnesium. And it's safe to the user, since it works cold... has no flash point... rinses with water.

STRIPPER S-A is but one of a long list of superior strippers by Oakite. Some are specially formulated

for use on steel... aluminum... other metals. Some for removing lacquers... tough synthetic finishes. Still others are designed especially for removing paint from vertical surfaces. Whatever your paint-stripping problem—Oakite is bound to have the answer. Ask your local Oakite man or send for paint-stripping bulletin F-7893. Oakite Products, Inc., 17 Rector Street, New York 6, N. Y.

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Engineered Atmospheres for Better Processing



MODERNIZATION WILL PAY OFF!

Automatic Controls

Modern Dryers and Ovens

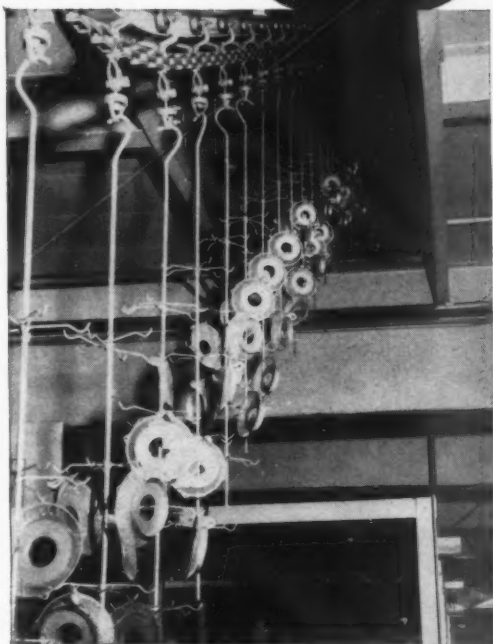
Paint Application Methods

Better Application of Air

More Efficient Heater
and Fans

Revamp to Accommodate
New Formulations

Broad Targets for Modernizing Your Paint Finishing Section



Considering your paint finishing department as a whole there are several operations where modernization by means of the modern Ross Unit or System might pay off quickly in operational savings: dryer, oven, controls, automation, fans, conveyors, hook-loads, travel cycles...all of which are included in the broad list above.

Any unit that has been in service, say, five years or more is approaching obsolescence, if not already in that cost-hiking state. It places a burden on your competitive situation...a burden that viciously pyramids.

Why not ask a Ross Paint Finishing Specialist to study your layout and report back? He'll be glad to do it. And he has the broad paint finishing experience to do an intelligent, objective job. A phone call or letter to our nearest office will have him there shortly.



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OF COMPLEMENTING SERVICES

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John Waldron Corporation, New Brunswick, N. J.
Andrews and Goodrich, Boston
Ross Engineering of Canada Limited, Montreal
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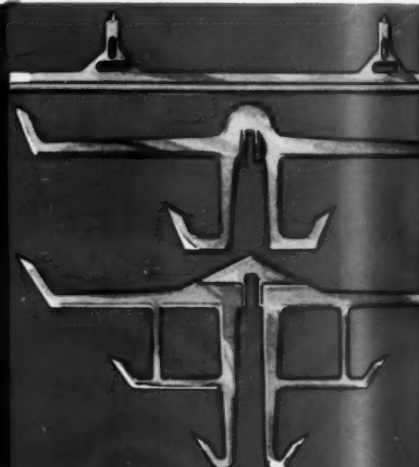
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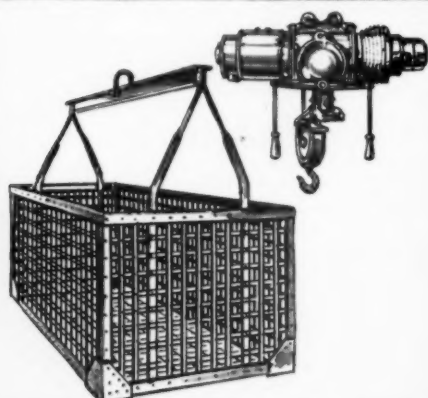
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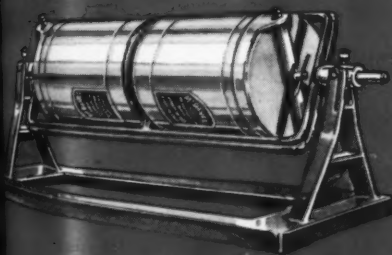
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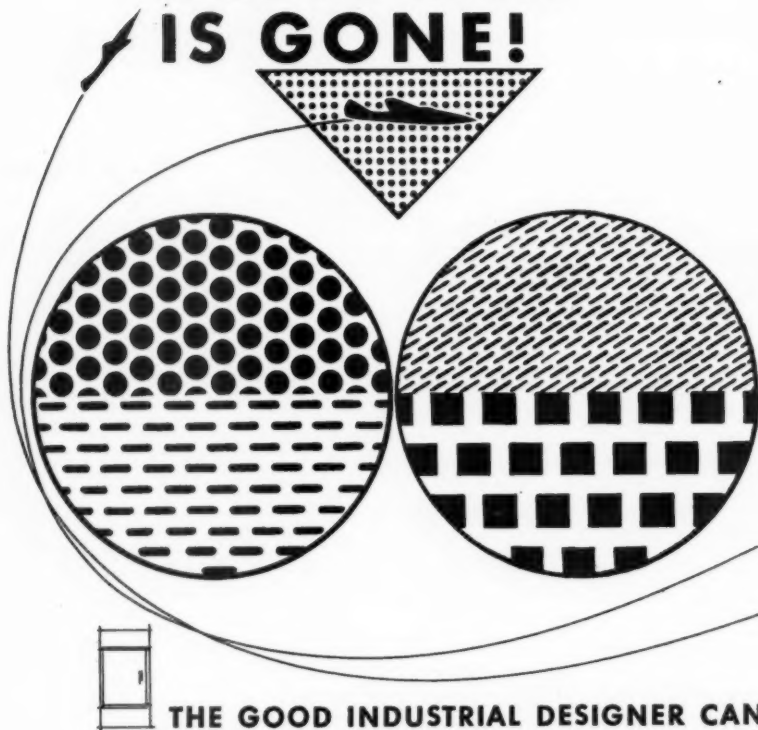
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INDUSTRY MEETINGS

APPLIANCE MANUFACTURERS

Institute of Appliance Manufacturers, Netherland-Hilton Hotel, Cincinnati, Ohio, June 1-3, 1959.

GRILL MANUFACTURERS

First Annual Meeting of Charcoal Grill Manufacturers Association, in conjunction with the Institute of Appliance Manufacturers National Convention and Exhibit, Netherland-Hilton Hotel, Cincinnati, Ohio, June 1-4, 1959.

MATERIAL HANDLING

American Material Handling Society, Inc.'s Technical Sessions, in conjunction with The Material Handling Institute's Exposition of 1959, Cleveland Public Auditorium, Cleveland, Ohio, June 9-12, 1959.

PRESSED METAL

Pressed Metal Institute's 1959 National Sales Seminar, Bedford Springs Hotel, Bedford, Pa., June 11-12, 1959.

INDUSTRIAL FINISHING

Fifth Industrial Finishing Exposition, sponsored by the American Electroplaters' Society, Detroit Artillery Armory, Oak Park, Mich., June 15-19, 1959.

HOME FURNISHINGS

International Home Furnishings Market, The Merchandise Mart, Chicago, Ill., June 15-26, 1959.

HOME LAUNDRY

The American Home Laundry Manufacturers Association's Annual Convention, Edgewater Beach Hotel, Chicago, Ill., June 18-19, 1959.

MECHANICAL ENGINEERS

The American Society of Mechanical Engineers' 22nd Applied Mechanics Division National Conference, Burruss Auditorium, Virginia Polytechnic Institute, Blacksburg, Va., June 18-20, 1959.

TESTING MATERIALS

American Society for Testing Materials' 62nd Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N.J., June 21-26, 1959.

STOVES, FURNACES

The Canadian Institute of Stove and Furnace Manufacturer's Summer Conference, The Chateauc, Ste. Anne, Quebec, Canada, June 3, 1959.

Welder's skill built into automatic brazing machine

(Continued from Page 30)

table where one operator, who also operates the batch press, inserts hairpin tubes into the fin holes. Fins are spaced ten to the inch.

The end-plates are then added to this assembly, and it is slid onto the mechanical expander. The expander table has built-in positioners to accommodate the three sizes. Operating a lever forces rods into, and lines up, the copper tubes, expanding and tightening them.

The now rigid assembly is pushed onto a roller conveyor and moves into the vapor degreaser. Cleaning vapor is trichloroethylene. In two minutes, the cleaned exchanger emerges from the opposite end of the vapor degreaser and moves along the roller conveyor opposite the brazing machine.

The operator rolls the assembly off the conveyor and stands it in the positioner. Two toggle-action clamps are tightened to hold the assembly in place. The operator then takes a handful of return bends and, one by one, places the bends over the open end tubes. Silver solder rings have been placed on the bends in the previous operation. No flux is used.

When all tubes are closed, the opera-

tor presses a starter button, and the brazing machine automatically moves the assembly into position under the brazing panel.



Worthington packaged air conditioner, using heat exchanger assembled at Decatur, Alabama works.

Radiant burners used

Brazing heat is supplied by a panel of radiant burners. Each consists of a cup-shaped, ceramic-lined burner into which the fuel mixture is introduced at the center, so that the existing combustion gases wipe the surface of the cup, making it incandescent. Combustion is confined close to the surface of the cup, so that there is no flame impingement on the workpiece. Most of the heat is transmitted as radiation, while the remainder is transmitted by convection of completely-burned combustion products.

Each burner in the panel is individually controllable to adjust for variations in size of coil, and to provide complete control of temperature uniformity in the workpiece. . . .

After a predetermined time, the brazed assembly automatically returns to the starting position. The clamps are removed and the assembly is rolled back onto the roll conveyor to go to the testing tank. The exchanger is plugged, an air line attached, and under 400 psi compressed air, the assembly is lowered into a six foot by eight foot by four foot steel tank filled with water.

Brazing time varies from 75 seconds to 90 seconds, depending on the size of the heat exchanger. . .

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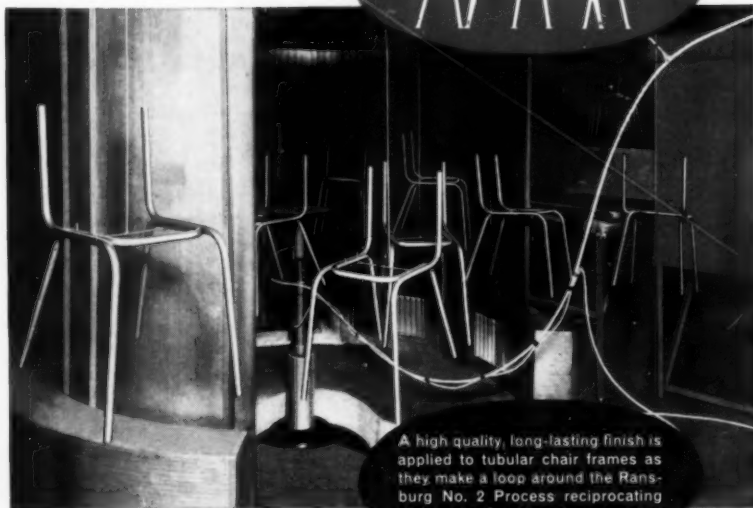
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**PROVIDES 50% PAINT SAVING
(over the former dip method)
in the finishing of KAY-MAR
DINETTE FURNITURE**



A high quality, long-lasting finish is applied to tubular chair frames as they make a loop around the Ransburg No. 2 Process reciprocating disk in the finishing department at Kay-Mar Industries.

● Kay-Mar Industries, Cassopolis, Michigan, switched from the dip method to Ransburg Electrostatic Spray Painting because they wanted to improve the quality of the finish on their metal furniture line.

Now, with electrostatic spray painting, they get a heavier, more uniform application, which was not possible with former dip. With electrostatic, they are able to use metallic coatings with higher metal content. In their magazine advertising to the mobile home industry, they proudly say: "Finest finish in the industry at no additional cost to you!"

Electrostatic provides other advantages at Kay-Mar. They picked up some additional—and much needed—floor space when dip tanks were removed. Their insurance rates were reduced because of improved "housekeeping" conditions. Frequent color changes are made quickly and simply, and rejects—which used to run 1½%—are reduced to less than a quarter of one per cent.

NO REASON WHY YOU CAN'T DO IT, TOO!

Let us test prove the advantages of automatic electrostatic spray painting on your products in our complete laboratories. No obligation. Call or write for our No. 2 Process brochure, which shows a variety of automatic painting installations on a wide variety of products. Or, if your production doesn't justify automatic painting, let us tell you about the new Ransburg No. 2 Process electrostatic hand gun, now widely used by both large and small manufacturers.



RANSBURG

**RANSBURG
Electro-Coating Corp.**

Box-23122, Indianapolis 23, Indiana

Personals

→ from Page 78

ufacturing engineer, **Robert Potter** from project engineer to manager-manufacturing services, and **Arthur R. Schneider** to chief engineer.

F. J. Littell Machine Co., Chicago, has announced the appointment of **Charles F. Netzler** as assistant sales manager for all sales territories. He has been Cleveland district manager for the past ten years. In his new post, Netzler will continue active coverage of the Ohio area and remain in charge of the Cleveland office.

Redmond Co., Inc., Owosso, Mich., manufacturers of fractional horsepower electric motors, has appointed **Edward Lindberg, Jr.** to the new position of field sales manager. **Michael J. Koenig**, general sales manager, stated that the position was created to enable Redmond to better serve its customers throughout the country.

Organic Coatings Div., Metal & Thermit Corp., has announced the appointment of **Donald R. Meserve** as sales manager, according to **Donald W. Oakley**, divisional general manager. Meserve has been with the company for 17 years, during which time he has been associated with research and development, technical service, production, and sales.

The O. Hommel Co., Pittsburgh manufacturer of ceramic raw materials, has announced the appointment of **Paul S. Cecil** as Eastern District sales and service manager, porcelain enamel frit division.

Wells Aluminum Corp., North Liberty, Ind., has announced the appointment of **L. C. Laderer** as executive vice president. Prior to assuming his new post, Laderer was vice president-sales.

Wells Aluminum is engaged in the manufacture of aluminum extrusions and fabricated aluminum assemblies for the appliance and architectural industries.

Pittsburgh Plate Glass Co. has announced the appointment of **J. T. Kelly** as manager of industrial sales for its Houston, Texas Paint Div. **Howard J. Mather**, general manager of industrial finishes and plastics for the division, named Kelly to succeed **William B. Calhoun, Jr.**, who has been named manager of automotive sales for the company's Ditzler Color Div., Detroit, Mich.



CORVEL Finishes provide uniform coverage of edges, corners, intersections
—In colorful, weather-resistant shades

New CORVEL† Cellulosic "fusion bond" Finishes . . .



*Uniform coatings of controlled thickness—
applied in a single dip without solvents
—for lasting beauty and durability*

CORVEL cellulosic finishes are specially processed dry powders, formulated for use in the patented* fluidized bed coating process. These finishes give you the following outstanding advantages:

- Complete protective finishes (approx. 0.008" to 0.032") obtained without solvents.
- Finish is unmarred by sags, drips, bare sections.
- Excellent coverage of wire intersections and joints, edges, corners and projections.
- Finishes are long lasting—retain gloss and color—resist water, salt spray, sunlight.

Thus, CORVEL finishes can give your products improved durability and appearance at minimum cost.

Process licensing is now readily available. A process license is automatically extended to the purchaser of CORVEL powders from National Polymer Products, Inc., upon payment of a small royalty added to each sales invoice. General licenses to use the patented process can be obtained from Polymer Processes, Inc., an affiliate company.

Investigate the advantages of CORVEL cellulosic finishes. Details on the fluidized bed process and equipment are available. Other CORVEL finishes include vinyls, epoxies, nylon, polyethylene, and chlorinated polyethers.

Write today for a copy of the CORVEL Bulletin C-M.

NATIONAL POLYMER PRODUCTS, INC. / Reading, Pennsylvania

West Coast facilities: The Polymer Corporation, Santa Ana, California

†Polymer Corporation trademark for finishing materials

*U.S. Patent 2,844,489 and over 30 patents pending



the odds-on favorite...



the PROCTOR "SELECTRONIC" PAN CONTROL

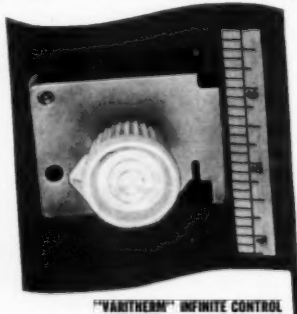
PROCTOR Electric Range Controls lead the field . . . the favorite by far, of the nation's range controls. And for good reason: PROCTOR Controls offer the range manufacturer, and the housewife, so much more. They are simpler, easier to install, and their performance adds real sales appeal to any electric range!



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CONSIDER THESE ADVANTAGES OF THE PROCTOR "SELECTRONIC" PAN CONTROL...

- Consists of but two components . . . there is no troublesome transformer.
- Instant response to temperature change, and the rate of temperature change . . . a true proportioning control.
- The spill-proof sensor is smooth stainless steel, free of crevices, stays clean.
- Easy to install . . . requires fewer electrical connections than any other type pan control.
- "Varitherm" Infinite Control provides stepless selection of the exact heat you want . . . neither too hot nor too cold.



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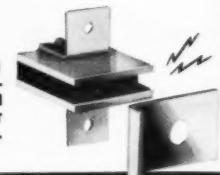
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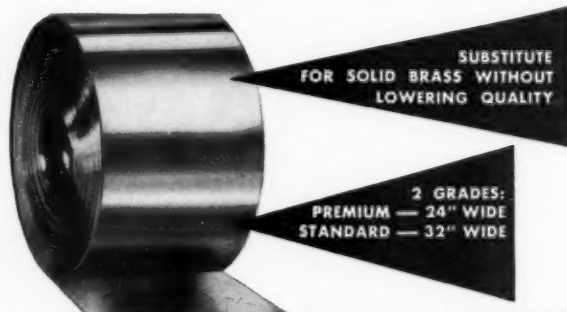
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Specialty items of all sizes*



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Dept. MP96, Rockford, Illinois

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PRODUCT PROTECTION BY THE GALLON



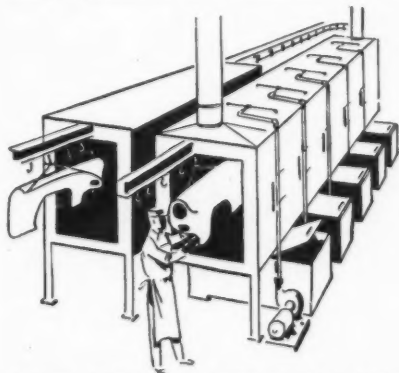
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One of the most widely used metal finishing chemicals, Amchem Granodine is the most effective pre-paint treatment yet developed for the protection of fabricated steel products.

The non-metallic phosphate coating produced by Amchem Granodine provides an effective base for durable paint finishing and greatly improves the corrosion resistance of the finished product. A variety of Granodizing processes are available for a wide range of

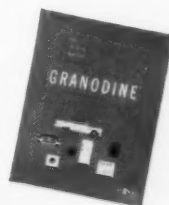
finishing operations . . . to assure your products of greater usability through lasting protection.

It may be well worth your while to investigate cost saving, efficient Amchem Granodine—today's most modern metal finishing chemical for steel. Check Amchem where service goes beyond the product with a complete program of technical and engineering assistance!



Granodizing process may be applied by power spray (shown on left), dip system or by hand application.

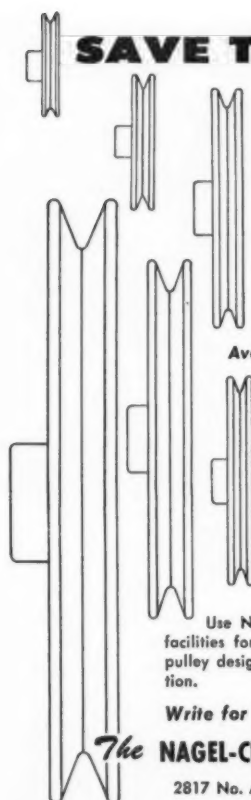
Write for Bulletin 1380 with Selection Chart to help you choose the Granodine type for your specific needs—and bulletins featuring other Amchem chemicals of vital interest to the fabricator of steel products.



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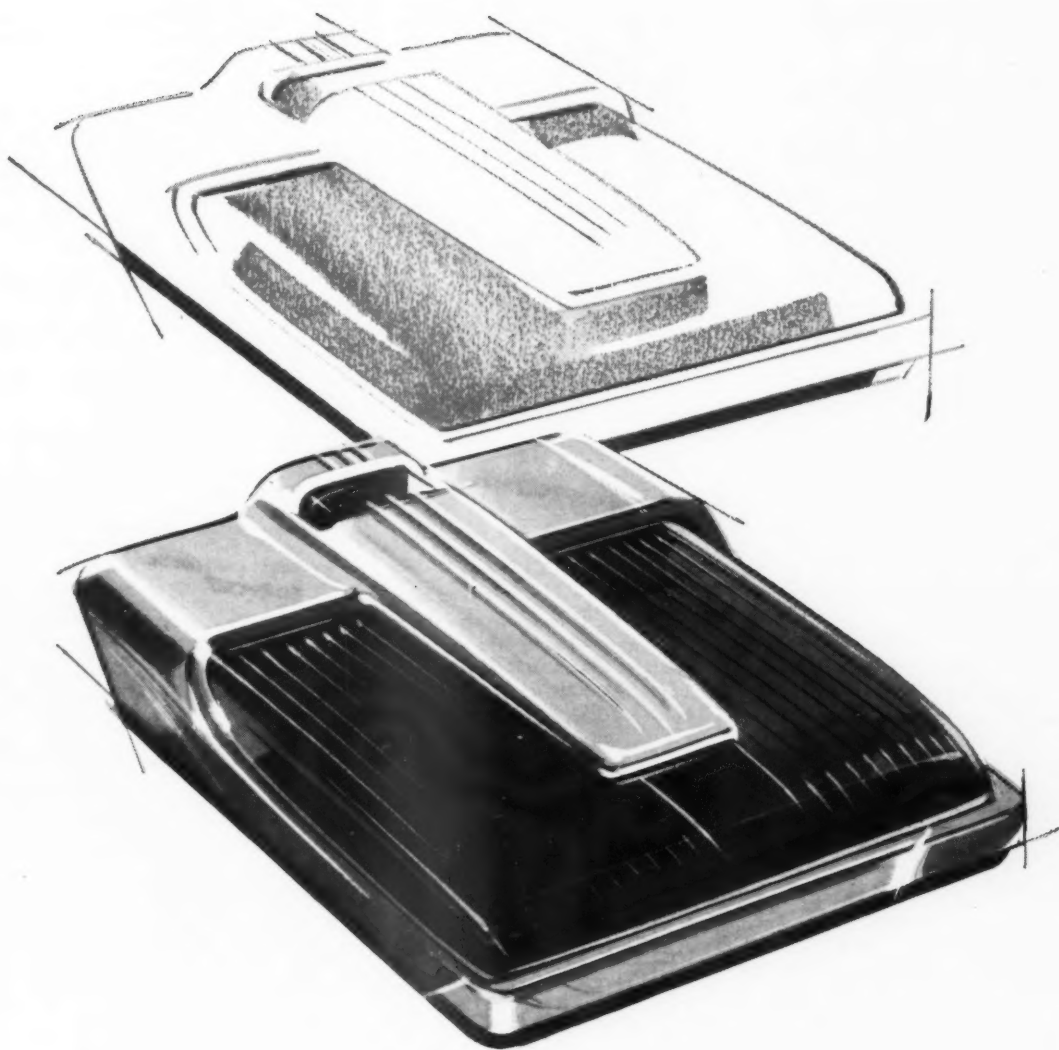
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FIRESTONE STEEL PRODUCTS COMPANY, AKRON 1, OHIO

Role of thermostats

→ from Page 27

8. Tolerances permissible on opening or closing temperatures.
9. Estimated number of operations for thermostat per day. Estimated life.
10. What is the maximum and minimum temperature to which the thermostat will be exposed?
11. For what length of time will it be exposed at these extremes?
12. What are the dimensions of space available for the thermostat in one or more preferable locations?
13. What quantity is desired?

A similar listing can be made for any other type thermostat application, such as for gas or liquid fuels. It is important to have a realization of all of the factors which can affect control, cost, and durability. With an awareness of the essential factors while the design of the appliance is in progress, the best control for the least cost can easily be selected.

In conjunction with the Application Check List, the appliance designer should follow this procedure:

- A. Decide whether an adjustable or non-adjustable thermostat is needed.
- B. Determine where it should be mounted to best sense temperature changes.



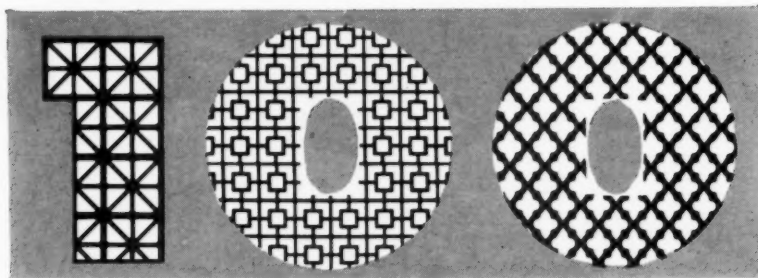
A complete gas water heater burner and control unit. It employs an adjustable probe-type thermostat that controls the flow of gas to the main gas line. Photo courtesy The Hotstream Heater Co.

1. Use a dummy thermostat with a thermocouple attached to the bimetal or bulb to run a series of tests.
2. Record the temperature of the region requiring control and the temperature of the bimetal or bulb.
3. Draw curves of the various temperature readings in each region tested.
4. With these curves, it should be simple to predict which spot is having the greatest temperature change with respect to the controlled point.
5. This is the spot where the thermostat should be located.
6. As a final check, sample thermostats should be made up and tested. In most cases, these final tests agree with the original tests, but sometimes situations arise that might require a few degrees change.

Acknowledgment

MPM editors are indebted to: W. C. Stevens, Stevens Mfg. Co.; Robert M. Glidden, Versailles Products Div., Metals & Controls Corp.; Jerry Gammon, Robertshaw-Fulton Controls Co.; M. A. Fuller and Harold Morrison, Whirlpool Corp.; and Howard Van Scoyck and D. F. Alexander, Frigidaire Div., GMC, for reviewing the manuscript and offering many helpful suggestions. We also wish to acknowledge the assistance of the following organizations: Penn Controls, Inc.; King-Seeley Corp.; White-Rodgers Co.; Deutsch Controls Corp.; Detroit Controls Div.; American-Standard; Therm-O-Disc, Inc.; The Hotstream Heater Co.; and General Controls Co.

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METAL PRODUCTS STATISTICS

a current report on available production, shipment and sales figures for important products in the appliance and fabricated metal products manufacturing field

	1959 (Units)	1958 (Units)	% Change
Gas Water Heaters.....March	267,300	221,600	+20.6
Jan.-Mar.	775,900	673,300	+15.2
Gas Ranges, Built-In.....March	24,700	16,600	+48.8
Jan.-Mar.	63,400	42,200	+50.2
Gas Ranges, Free-Standing....March	148,700	132,800	+12.0
Jan.-Mar.	414,400	369,900	+12.0
Gas Furnaces.....March	65,500	51,100	+28.2
Jan.-Mar.	193,600	143,000	+35.4
Gas Fired Boilers.....March	7,600	5,400	+40.7
Jan.-Mar.	19,000	16,100	+18.0
Gas Conversion Burners.....March	5,500	6,400	-14.1
Jan.-Mar.	18,100	21,300	-15.0
Electric Refrigerators.....March	333,700	261,100	+27.8
Jan.-Mar.	896,100	695,000	+28.9
Electric Freezers.....March	121,400	75,400	+61.0
Jan.-Mar.	290,800	204,900	+41.9
Electric Ranges, Free-Standing..March	102,200	71,200	+43.5
Jan.-Mar.	267,400	224,900	+18.8
Electric Ranges, Built-In.....March	70,400	46,700	+50.5
Jan.-Mar.	160,600	110,700	+45.1
Electric Storage Water Heaters..March	74,900	68,600	+9.1
Jan.-Mar.	213,200	188,300	+13.2
Electric Dishwashers.....March	46,400	32,900	+41.0
Jan.-Mar.	126,200	92,500	+36.4
Electric Food Waste Disposers..March	61,600	47,800	+28.8
Jan.-Mar.	169,100	135,000	+25.2
Combination Washer-Dryers...March	16,207	12,317	+32.0
Jan.-Mar.	53,715	38,155	+41.0
Washers, Automatic & Semi...March	248,729	219,292	+13.0
Jan.-Mar.	701,577	612,081	+15.0
Washers, Wringer & Others...March	80,939	68,592	+18.0
Jan.-Mar.	214,408	188,786	+14.0
Electric Dryers.....March	68,670	51,368	+34.0
Jan.-Mar.	216,685	180,473	+20.0
Gas Dryers.....March	29,764	20,155	+48.0
Jan.-Mar.	106,243	71,526	+48.0
Vacuum Cleaners.....March	346,557	291,418	+18.9
Jan.-Mar.	860,469	782,538	+10.0
Metal Furniture.....March	*	*	+12.0
Jan.-Mar.	*	*	+10.0
†Television.....March	494,032	416,903	+18.4
Jan.-Mar.	1,390,550	1,221,299	+13.9
†Radios.....March	1,347,554	931,341	+43.6
Jan.-Mar.	3,597,676	2,604,244	+34.3
Compressor Bodies.....January	(1) 518,755	(2) 315,318	
Steel Barrels & Drums.....February	2,561,711	2,307,038	+11.0
Jan.-Feb.	5,166,306	4,894,099	+5.5
Steel Pails.....February	5,448,946	4,594,822	+18.8
Jan.-Feb.	10,457,214	9,993,095	+4.6

(1) Includes units for household refrigerators

(2) Not including units for household refrigerators

* Not Reported

† Output

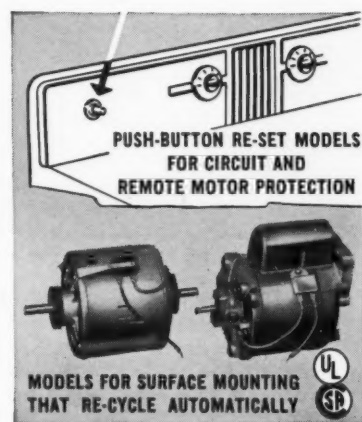
Sources for this information: Gas Appliance Manufacturers Association, National Electrical Manufacturers Association, American Home Laundry Manufacturers Association, Vacuum Cleaner Manufacturers Association, National Association of Furniture Manufacturers, Electronic Industries Association, Air-Conditioning and Refrigeration Institute, and U.S. Dept. of Commerce.

Protect your motors and circuits with

MP MINI-BREAKER®

17

appliance makers say it really cuts service problems, adds sales spark



Here are sure, positive protectors against motor burn out and dangerous circuit overload. But they can be factory set for any time lag you may desire so normal overloads can be tolerated without nuisance trips. Easy mounting without harness saves money. Ratings to suit every appliance.

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MEET
THE
MAN
FROM
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At Lockheed Aircraft Corp . . .

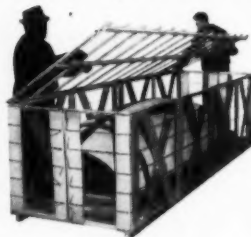
Jet canopies packed at 1/3 the cost ...in protective Wirebound crates

Damage-free shipment is an absolute "must" for the product you see above. Used by the Lockheed Aircraft Corp. (Marietta, Ga., plant) in its B-47 Stratojet Modification Program, it's a plastic cockpit canopy. Over 12 feet long, these canopies are valued at up to \$20,000 each!

Until the Man from Wirebound arrived on the scene, these units were packed in wood crates made and assembled by hand. Today they're packed easier, faster in wholly prefabricated Wirebounds. Result: increased safety in transit . . . at a *third* of the former cost! Yes, and tare weight was cut by 117 lbs.

Savings like these typify the results *you* may achieve with Wirebounds. Custom-engineered to your product and requirements, modern Wirebound containers combine the exact strength you need . . . with maximum savings in time, labor, weight and container costs.

Why not have the nearby Man from Wirebound pay your plant a visit. A qualified packaging engineer, he'll be happy to study your methods . . . offer money-saving suggestions . . . and even submit sample Wirebounds for testing. There's no cost or obligation.



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92/30

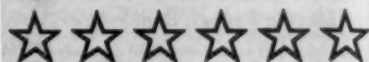
Presstime News

→ from Page 74

tee. Until his appointment, he had been executive vice president of engineering and research for U.S. Steel.

Lyon Metal Products Corp.'s board of directors has announced the election of **J. M. Olesen** as executive vice president. He started with Lyon in 1929 and became vice president in charge of sales in 1952.

Chicago Vitreous Corp. has announced the appointment of **Ray McCook**, formerly with the Roper Corp., as superintendent of steel building manufacturing. Except for the period 1931-33, McCook was with Roper from 1927 through 1958. His responsibilities there included foreman of the enameling plant, chief inspector, and, from 1945 through '58, superintendent of the stove division.



COMING FEATURES

DESIGN

LATEST WASTE KING DISHWASHER-DRYER

FABRICATION

BUFFING OF STAINLESS STEEL
PROCESSING METAL TOPS AT
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FOR CURRENT AND FUTURE NEEDS

GENERAL

VINYL ON METAL AT SUN STEEL



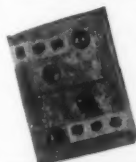
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editorial voice of the national safe transit program

devoted to improving packaging methods and shipping and materials handling methods for the appliance and metal products manufacturing industries. This section contains plant experience information and industry advances for the use of all executives and plant men interested in improving packaging and shipping methods and in loss prevention. The section contains complete information on the national safe transit pre-shipment testing program for packaged finished products and detailed reports of divisions and sub-committees of the National Safe Transit Committee.

Steel Strapping Kit Aids Light Shipments

A steel strapping kit now on the market is designed to reinforce, seal, or bundle small shipping cartons for office and shipping rooms where heavier type strapping equipment would be impractical.

Using 18½ gauge, copper coated steel strapping—approximately 2,500 feet in an easel fibre carton and an



auxiliary cutter—the unit tensions and ties the round steel strapping with a single stroke of the lever, taking only seconds to complete.

Steel strapped packages are said to be stronger, assuring safe arrival of packages and offering greater protection against pilferage and concealed losses. For complete information, write Dept. MPM, Inland Wire Products Co., 3947 S. Lowe Ave., Chicago 9, Ill.

Bulk Keg Packaging Used at Parker-Kalon

A bulk keg packaging schedule for tapping screws has been developed by Parker-Kalon Div., General American Transportation Corp., Clifton, N.J. Under this concept, the customer will get the advantage of bulk prices based upon keg quantities, instead of piece quantities.

According to William T. Ylvisaker, president, the idea was developed to facilitate ordering of screws in bulk quantities, ease stockroom handling, afford more accurate inventory control, and efficiently allocate fasteners to production lines.

Automatic Charger Rides On Truck Batteries

An automatic charger for electric industrial truck batteries, which rides on the battery itself, has been introduced. This silicon-rectifier device, with transistorized control unit, can be plugged into a 115-volt, ac wall outlet to charge the battery in the truck. No additional equipment is needed.

The new charger is said to provide the first automatic taper-rate charging system in rectifier-type equipment, save on space, labor, and downtime, assure longer battery life, and minimize battery maintenance. For further information, contact Dept. MPM, Exide Industrial Div., The Electric Storage Battery Co., Rising Sun and Adams Aves., Philadelphia 20, Pa.

Shoe-Type Brake

It has been disclosed that a shoe-type brake is now available for the first time on hand pallet trucks. It is controlled by the pallet truck's steering handle and

employs a lined brake shoe which acts against the steering wheels.

A feature of the brake is its ability to slow the pallet truck gradually or stop it instantly. It is claimed that, with the brake's use, no floors are marred because the braking action is applied to the truck wheels, not to the floor. For further information, contact Dept. MPM, Stokvis Multiton Corp., 18 Secatoag Ave., Port Washington, N.Y.

Truck Has Bale Grab Arms



Light duty, bale handling operations are easily achieved with this load grab with bale grab arms now being used by Lewis-Shepard Products, Inc., Watertown, Mass. The bale grab arms are detachable and can be interchanged with a variety of cascade arms, making it possible to handle different loads.

All manufacturing, engineering, and quality efforts are in vain if the product reaches its destination in a damaged condition.

Pushbutton storage system

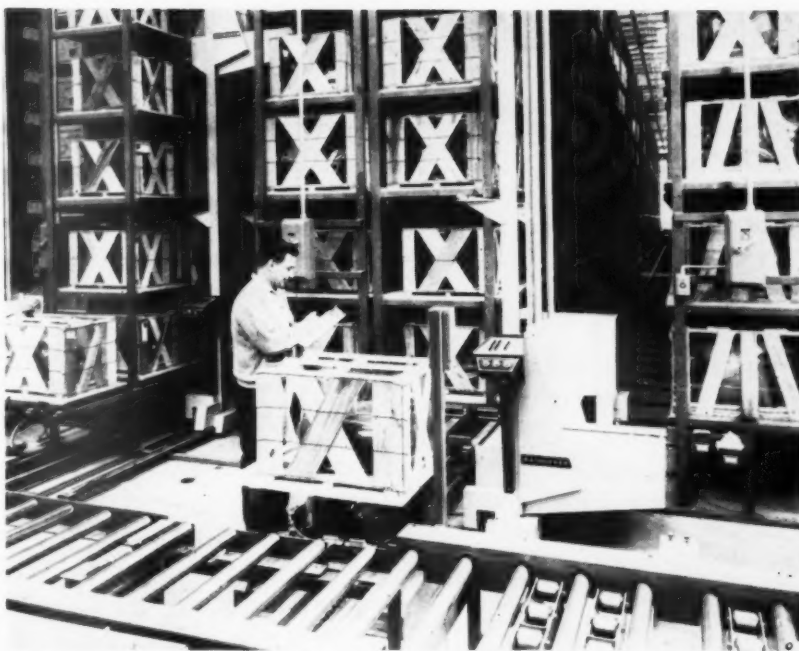
provides high selectivity

WHEN RELIANCE ELECTRIC & Engineering Co., Cleveland, Ohio, required a storage and handling system that would give them a high degree of selectivity, Triax Equipmet Co. stepped into the picture.

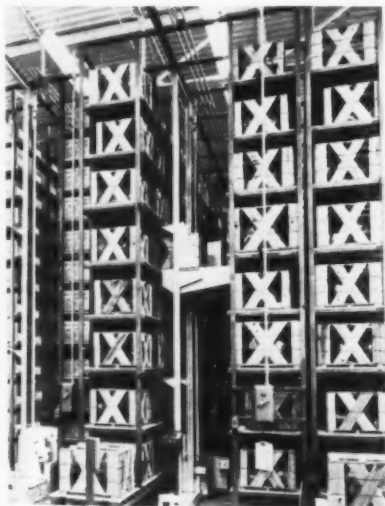
The Cleveland firm designed a one-man, pushbutton system to provide selective delivery of any desired volume of material to and from a central loading area through the use of electronic controls.

Since Reliance Electric manufactures fractional hp motors, a weight problem was involved. Triax solved this by using rolled and welded steel tubing for panel sections of the 4,800 storage compartments in the system. Each compartment thus became capable of delivering loads of up to 3,500 pounds.

The system is an outgrowth of the



4800 compartments of up to 3500 pounds capacity each are at the selective push-key command of one operator in the new system developed for loading, unloading and delivery of material to and from a central loading point. In this photograph, operator checks in a load being delivered by roller conveyor and mechanical transfer to the Retriever travelling carrier unit. Note 150-foot aisle length.



Here the system eases heavy electric motor into storage compartment. The travelling carrier can deliver loads into openings on either side of narrow aisle, and to heights above 20 feet. Average time needed to move a load to or from storage is one minute, and the system includes roller-conveyor and transfer equipment enabling one man to carry on operation of major storage facility.

Triax floor-to-ceiling storage wall, made up of an electrically-operated travelling carrier or retriever which moves horizontally along an aisle, then vertically, to deposit or remove a load from either a tier or a compartment.

In the new system, the travelling carrier can load or unload from openings on both sides of narrow aisles. The selectivity is obtained with a push-key panel at the end of each aisle. Here, the 3/4 hp squirrel cage motor, and 1/4 hp gearmotors are transferred to roller conveyors for delivery to the loading dock or to the retriever unit for storage.

The installation consists of four aisles, with storage compartments to a height of just under twenty-one feet. The two longest aisles are 150 feet in length and 42 inches in width. Each of these aisles have 1,008 compartments, extending three feet back from the aisle

and approximately two feet square at the opening. The compartments are eight high.

Two 110-foot aisles contain 1,392 compartments each for twelve-high stacking. The compartments extend twenty-four inches back from the aisles and are eighteen inches square at the opening. Aisles for this section of the system are only thirty inches wide.

According to George R. Johnson, general manager of Triax, the entire unit requires only 5,005 square feet of floor space, including the operator's area and the conveyor system, because of the above-normal height stacking and the elimination of wide aisles.

A feature of the system is its uncomplicated controls. If the operator makes a mistake and tries to fill a loaded compartment, the travelling carrier automatically rejects the assignment and returns to its starting position.

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ARI (Mr. Jones continues)

→ from Page 62

great debt to the refrigeration engineers who have made present accomplishments in the field practical realities.

AN MPM INTERVIEW WITH

J. E. Lauer

RETIRED CHM. BOARD, YORK CORPORATION

Question: As an oldtimer in the industry, will you give us a brief comment on the development of the refrigeration cycle?

The refrigeration cycle has come a long way since 1911 when I first entered this industry, and it is becoming more widespread and more essential to our lives with each day that passes. Big ice machines provided the primary application for mechanical refrigeration in the days preceding World War I, and in the years between the two major conflicts household and commercial refrigeration began to grow up.

Today, however, there are few industries or occupations that are not dependent in varying degree upon mechanical refrigeration and its offspring — air-conditioning — and I feel that its possibilities will develop to an even greater extent in the years to come, as more and more homes, offices, laboratories, factories and essential defense applications find the products of our industry to be not only highly desirable, but in many cases, indispensable to new processes and conditions.

And today the refrigeration cycle is used not only for cooling but for heating as well. Through the development of the heat pump, we find that an air-conditioning device may be made to draw warm air from the outside atmosphere and deliver it to the rooms to be heated; then, when the season changes, the same device will extract the heat from warm rooms, thus maintaining a pleasant temperature the year 'round.



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Saving your time and manufacturing dollars is more than a habit at Union Steel, it's a tradition! Devising ingenious ways to shorten time between idea and delivery, creation of new designs in welded wire, engineering new methods for more rapid, economical manufacture . . . all are routine benefits you realize when you specify Union Steel, the experienced source that guarantees welded wire components of higher quality.

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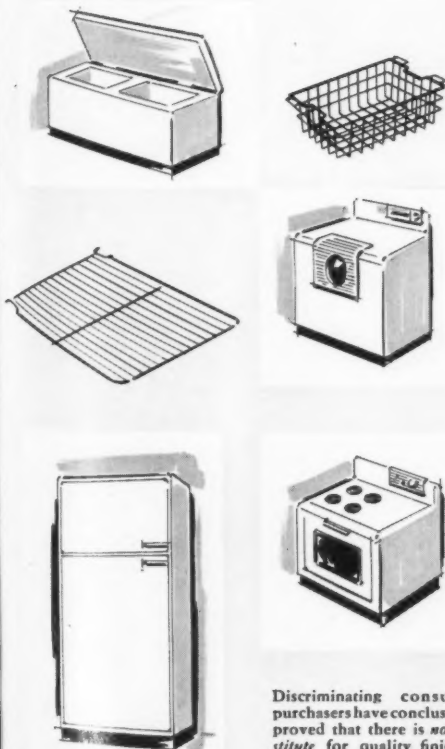
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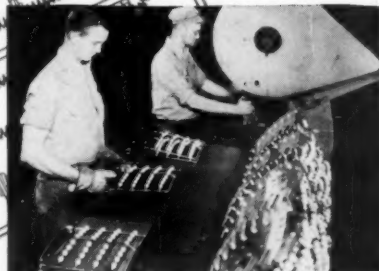
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Inspection of frame slotting operation assures accurate depth control for necessary crossbar "breathing space."



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Wire-threading and inspection operations are combined in "TEP" assembly-line procedure.



Final ohm inspection before packaging insures correct wattage and wire size. Each unit is high potential at 1700 volts.

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- **FLOATING FRAME CONSTRUCTION** — "TEP" patented feature allows unit frame to breathe. Flexibility lengthens frame life. Rigidly welded frames distort, or welds break.
- **SURE-LOCK INSULATOR SUPPORTS** — specially designed by "TEP" eliminate dislocating and subsequent electrical failures.
- **SPECIALLY TREATED INSULATORS** — reduce micro-amp leakage. "TEP" pioneered porosity-controlled steatite to assure longer life.
- **SPECIAL NICKEL PLATING** — exclusive "TEP" process assures a chrome-like finish, eliminates corrosion.

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In the manufacture of "TEP" Open-Coil Heating Elements, progressive assembly line inspection has long been employed to assure a top quality product for appliance manufacturers. As illustrated, "TEP" quality control procedure employs 100% inspection of all units . . . is one of the major reasons why you save time and trouble in assembly and testing. There is a total of 14 inspection operations on the average "TEP-built" heating element. This method also insures maximum economy in manufacturing a quality product. For dependable performance, it pays to specify "TEP".

Design and Engineering Assistance

When developing new or improving old units, we suggest that you take advantage of free "TEP" engineering and design service. Over 30 years of experience in electrical heating applications is available to you. Phone or write today for specialized assistance with any of your heating problems.



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